Personnel

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SEPTEMBER, 1943

AMERICAN MANAGEMENT ASSOCIATION
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THE AMERICAN MANAGEMENT ASSOCIATION

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..... Strictly personnel

Special Problems of Women Workers

Two years' experience in using women for direct production work by the Consolidated Vultee Aircraft Corporation, San Diego, Calif., has demonstrated that they can perform such work successfully and "are making an important contribution to the winning of the war," said W. Gerald Tuttle, Director of Industrial Relations of the corporation, in an address at the semi-annual meeting of the American Society of Mechanical Engineers.

Mr. Tuttle said that the employment of women, which began as an experiment, had proved so successful that they now comprise 45 per cent of the total working force at the San Diego Division of the corporation, while in new inductions the proportion is 65 per cent women. Employment of women has helped to increase and speed up production.

"When women arrived on the production and assembly lines, they brought with them a whole host of problems," said Mr. Tuttle. "These problems are being solved at a rapid rate. . . .

"To solve the problems that arose when women came into war production, the industrial relations department first determined what the distinctive differences between men and women in production work were. They found women did not have the muscular strength of men, that their bone structure made rotary arm movement difficult and their balance precarious, and that their susceptibility to fatigue required more frequent rest periods than had been customary. They also found that women were deft in handling and assembling small assemblies, that they resisted monotony well, and that they were accurate and careful in their work. Women were found to be less stable emotionally than men; they disliked competitive situations, and were upset by criticism but responded quickly to praise.

"Management redesigned many of its tools to eliminate the need for sheer strength in their operation, revised its production procedures to throw complicated structures into simple subassemblies, and instructed its foremen and assistant foremen in the proper manner of training and directing women.

"Management also found it necessary to add a new supervisory function. Women counselors were employed to advise women employees on both their personal and factory problems. Counselors act as liaison officers between women employees and those private and governmental agencies through which women can obtain assistance in caring for their children and in finding recreation and social contacts for themselves."

Mr. Tuttle said that physical points of variation between men and women as they apply to their working capabilities were a fundamental factor in the use of women in direct production work. He explained them as follows:

"In bodily structure the average man is larger than the average woman. But women are not just small men. They are also formed and proportioned differently.

"Women's hands differ from men's hands in that, proportionately, their

thumbs tend to be shorter and their index fingers longer. These differences in hands contribute to women's deftness in the rapid handling of small parts and small assemblies.

"Women also have, still proportionately, shorter arms and legs and longer trunks than men. This necessitates a change in the measurements of workbenches originally set up for men. The average elbow height of the women in our plants was found to be 39.9 inches. Thus a woman's bench should be about 37 inches high. Also her reach is about 10 per cent less than that of the average man. Consequently, the width of benches originally designed for men should be reduced by that amount. In redesigning other work layouts for women in fabrication departments and on assembly lines, these differences in elbow height and reach should be borne in mind.

"Comparative differences in strength between men and women are greater than the mere difference in size. The average woman's body is only 35 per cent muscle, in comparison to the average man's 41 per cent. Women's muscles are also proportionately longer and thinner, and their muscle fibers less viscous.

"Of a woman's weight, only 54 per cent is strength. Of a man's weight, 87 per cent is strength. This means a woman is not only smaller, but proportionately she has less sheer muscular strength per pound. For this reason the average woman's hand squeeze exerts only a 48-pound pressure, while the average man squeezes 81 pounds.

"Although the lack of muscular strength is an important factor in the fatigue ratio of women on many kinds of work, blood differences between men and women are often more significant in accounting for women's greater need of rest periods. Woman's blood is 80 per cent water; man's blood is 75 per cent water. A woman has 30 per cent fewer red blood corpuscles than a man. Every minute a woman's heart beats eight to 10 more beats than a man's. By the time she dies, her heart has struck off some 300,000,000 more heartbeats than a man's.

"In considering the comparative muscular control exercised by men and women, an interesting fact develops. In light rhythmical movements, women are faster and more accurate than men. But if a decision is to be made in the course of the operation, women immediately slow down. They have a marked delay in what is known as the 'decision time.' Production engineers have taken this reaction delay into account when arranging work schedules for women. Whenever possible, an operation should be set up in detail so that the need for making decisions does not arise. . . .

"The greater emotionality of women is particularly noticeable in their reaction to supervision. Men on the job will exchange a large share of good-natured kidding and enjoy it. This will occur between foreman and workers, with no ill feeling on either side. But women do not like this rough approach, and it should be avoided to prevent hurt feelings, perhaps tears, and certainly an impairment of working efficiency.

"Another difference in the approach of women toward group tasks is that they dislike open competition. They do not respond well to contests, whether at play or at work. Personal or group competition is apt to set up a pressure that will retard women's work rather than accelerate it.

"This dislike of open competition is especially to be remembered in establishing training courses and induction procedures. Inexperienced women should be grouped with other inexperienced women in training or in being started on a job so that they receive reassurance

from the fact that others are having the same difficulty in mastering the new work."

★

Prescription for Sound Industrial Relations

The National Association of Manufacturers has called upon American industrial management for a thorough review of employer-employee relationship policies as a basis for maximum war production and postwar prosperity. Implementing its plea, the Association offers a program of eight specific employment policies which would establish "the principles and practices that govern pay, securities, rights and privileges and other features of employment." This eight-point program, as summarized by *The Journal of Commerce,* follows:

1. A considerate and orderly hiring procedure providing for courteous and understanding reception, interview and induction.

2. A wage schedule in harmony with the general wage levels for similar work in the community and in industry, giving due regard to skill, responsibility, experience and physical demands.

3. Definite procedures for promotions, layoffs and dismissals.

4. Specific rules and regulations pertaining to hours, overtime, vacations, discipline, etc., clearly defined and impartially enforced.

5. An orderly step-by-step procedure for the prompt and impartial consideration and adjustment of misunderstandings and grievances.

6. A specific program and definite policy for the selection and training of supervisory personnel.

7. The provision of information to employees on company policies and problems affecting employment relationships and continuity of employment, to the maximum extent consistent with practical and sensible managerial responsibility.

8. A written statement of company policies and practices, clearly stated and defined.

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Overtime for Supervisors

The tendency for overtime wages to narrow the pay differential between supervisors and operators has been plaguing management since the start of the war, but thus far surprisingly little has been done about it. Of 369 companies queried by the National Industrial Conference Board recently, only 40 per cent had adopted plans for coping with the problem, and several were of the opinion that no solution exists. Further, there appeared to be little uniformity among the plans in use.

Since the introduction of salary stabilization, of course, it has not been possible to start paying overtime to supervisors without first obtaining Treasury approval. But on July 1 new interpretations were issued by the Commissioner of Internal Revenue which make it clear that, where the normal workweek has been extended to 48 hours or more, the Stabilization Unit will look with favor on requests for increases designed to maintain differentials.

"Due to the extension of the workweek . . .," states the Commissioner's announcement, "payment for overtime to wage earners without any additional compensation to the salaried personnel in many cases results in the wage earners' receiving more total compensation than their immediate supervisors, and in some cases more than the second and third levels of supervision. In order to clarify the position which will be taken

in this matter, the Commissioner has issued instructions to the regional offices of the Salary Stabilization Unit as to the methods under which payments of additional compensation to salaried personnel may be determined. Under these instructions, the maximum amounts which will be allowed are such amounts as are necessary to keep the minimum differentials between the interrelated job classifications required for the maintenance of productive efficiency."

It seems clear from the instructions that the Commissioner does not propose in many cases to permit payment to supervisors of the full amount they would receive on a regular time-and-one-half basis. The higher the pay, the less the percentage increase for "the amount allowable . . . will . . . be progressively reduced . . . in such manner that each succeeding higher level receives a proportionately lesser amount."

To facilitate approval of increases of this type, the Commissioner urges that applications for increases be accompanied by the following data:

1. Hours of the extended workweek.
2. Hours of the previous workweek.
3. Rates of pay of wage earners and salaried employees under the jurisdiction of the National War Labor Board, and the amounts and rates of overtime being paid to these groups as well as to groups under the jurisdiction of the Commissioner.
4. The number of employees for whom payments are proposed, together with their rates of pay.
5. A description of the several types or levels of supervision.
6. A sufficiently clear description of the job classifications and positions of those required to work the same hours as the wage earners, or longer, under the extended workweek and for whom overtime compensation is requested.
7. The top level of supervision at which the minimum additional compensation is required.
8. The amount of additional compensation deemed necessary at the top level of supervision so determined.
9. The basis upon which both the top level of supervision and the amount of additional compensation to be paid that level have been determined.

★

The Guaranteed Workweek In Britain

Some 8,000,000 essential employees in Britain are now enjoying the benefits of a guaranteed workweek, the British Information Services report. Under this plan the worker who is "capable of and available for work" receives a sum "not less than the normal wage for the prescribed period" whether the employer can keep him busy or not. (If the worker's own job is unavailable, he must be willing to do anything "reasonably" required of him; but it will not necessarily be considered reasonable to ask a skilled man to handle a laborer's job.)

This is just one of the ways in which British workers have been compensated for the hardships of a tight manpower freeze. Before a plant can be classified as "essential," the Minister of Labour must be satisfied that working conditions are "not less favorable than the recognized terms and conditions" in the industry and the district, which means, in most cases, that the employer must meet the standards established by collective bargaining. Again, freezing works both ways. If the worker cannot quit his job, management cannot dismiss him (except for serious misconduct) without written permission from a representative of the Ministry of Labour. True, the employer may appeal from the

decision of this official to a local board composed of representatives of management and labor, but the employee has the same privilege. Further, even in the case of "serious misconduct," the employee may contest his dismissal before the Appeal Board.

★

Suggestion Awards And the WLB

Do cash awards for employee suggestions constitute wage increases under stabilization regulations? Some companies which have sought to stimulate job improvements by establishing cash or war bond awards for accepted suggestions have been advised by their attorneys that such awards might be held by the National War Labor Board to be, in effect, wage increases. Operation of many new suggestion plans has been postponed for this reason.

To clarify this question, officials of Training Within Industry (whose Job Methods Training provides a streamlined procedure for making job improvements) addressed an inquiry to John Byrne Chamberlin, Assistant General Counsel of the War Labor Board. In his reply Mr. Chamberlin declared that, with certain provisos, such awards do not require the Board's approval. His opinion follows:

"Cash awards for employee suggestions designed to increase production do not require Board approval, provided that the awards are not a subterfuge for increasing wages but represent a genuine award for additional effort on the part of the employee outside of his normal work, and are in an amount which would be regarded by normal industry tests as not in excess of the value of the contribution by the employee. An employee who has discovered short cuts in manufacturing, perfected an invention, or otherwise accomplished some work in addition to his regular duties may receive a bonus or other form of compensation commensurate with the value of that service which was not required in the regular course of duty.

"You understand, of course, that the awards must not be a disguised wage increase and that they must not exceed the value of the service."

★

Community Manpower Plan

How a community program can help to halt in-migration, utilize local labor, and make life more livable for a war-swollen population is illustrated by the case of the cities of Dayton and Springfield, Ohio. The Dayton-Springfield plan, according to *The Iron Age,* relieved a tight manpower situation and an even tighter housing shortage through the following steps:

1. All manufacturers and retailers in the area agreed not to hire anyone who had been in the community less than 30 days, except with the approval of the U. S. Employment Service. As approval is granted only in cases of key workers or construction laborers, hiring of outsiders has fallen from 500 a week to about 125.

2. Dayton and Springfield manufacturers voluntarily agreed not to seek any contracts that would require them to hire more workers than they had estimated they would need in their OES 270 (manpower inventory) reports of May 1, except with War Manpower Commission approval.

3. Retailers, including the large department stores, agreed to reduce full-time employment to 1940 levels.

4. The Wright and Patterson air fields adopted a policy of decentralizing wherever possible and took action aimed

at fuller and better utilization of manpower.

5. Larger war plants declared a 90-day moratorium on hiring in order to determine the true manpower situation in the community.

6. Radio stations, posters and newspapers warned outsiders to stay away from Dayton unless they possessed special skills not available in the community.

7. Manufacturers and the air fields were polled to secure revised and realistic estimates of future labor needs. It was determined that manpower estimates for the year ending May 1, 1943, were 11,085 more than actual hirings. The poll resulted in a decrease of 9,622 for the next three months and of 18,394 for the next year.

8. Since women were the area's biggest source of potential manpower, manufacturers were asked to reserve "certain occupations exclusively for women." It was found that women could handle 6,000 jobs currently being filled by men.

9. Volunteers polled women in the area and found that many more than had been expected were available for wartime jobs. Whereas the WMC had credited Dayton-Springfield with a reserve of 9,000 potential women workers, 10,137 were found available for full-time work, 7,508 for part-time work, and 9,272 "available maybe." An informational campaign was initiated, using newspapers, billboards, radio, motion pictures and special pamphlets to bring women into industry.

10. Stores, banks, ration boards, barber shops, beauty parlors, and other community services were persuaded to remain open two nights a week for the benefit of war workers.

11. A house-to-house canvass, conducted to persuade Dayton families to open their homes to war workers, located enough rooms to meet the demand and leave a surplus of 850. Many families rented rooms for the first time in their lives.

12. Five hundred private homes were converted into apartments, several dormitories were erected, and housing projects were speeded to fill the acute need for family-type housing.

13. Nine buses were added to the line providing service to the air fields, which are located in isolated sections. Formerly workers had to wait as long as an hour and a half for transportation at unsheltered loading stations; now waiting time has been cut to 15 minutes, and sheltered platforms have been built.

14. A special survey was made preparatory to organizing a community-wide recreational program in both Dayton and Springfield.

15. Frills were eliminated from laundry and restaurant services so that more people could be served and waiting time decreased.

★

"The One Best Way"

Fourteen ways in which a worker can increase his productivity are listed in *These Are Your Weapons*, a booklet issued by the War Production Drive Committee of the Plomb Tool Company, Los Angeles.

The worker is directed to ask himself the following questions:

1. Have I freed my hand from holding?
2. Have I found the rhythm of my job?
3. Is my job set up for drop delivery?
4. Is my work laid out in my normal working area?
5. Do I work with balanced motions?
6. Do I use the lowest possible motion classification?
7. Have I eliminated *searching* and *selecting?*
8. Are my tools and materials *prepositioned?*
9. Have I eliminated positioning time?

10. Does my tooling have ejectors and quick-acting clamps?
11. Have I put my foot to work?
12. Do I produce two or more in one operation?
13. Have I eliminated unnecessary handling time by combining operations?
14. Have I broken long and complicated jobs into smaller elements?

One or two pages, illustrated with photographs or drawings, are devoted to an explanation of each of the 14 questions. The worker is instructed to score 10 points for each affirmative answer. A score of 140 means that he has found "the one best way" of performing his job until a completely new method is devised. A score ranging from 130 to 100 means "excellent, but a substantial increase in your production is possible"; 100 to 80, "good, but you might be able to double your production"; 80 to 40, "You are in low gear"; and below 40, "You are doing your job the hard way."

The booklet includes a description of the company's suggestion system, which provides for unlimited awards. Any Plomb Tool employee is eligible for awards, with the exception of major department heads, assistant superintendents, and members of the engineering, methods, and time study departments—although supervisors (on the theory that making improvements is part of their jobs) receive awards only half as large as those granted operators.

★

New Evidence for Incentives

Findings of a Department of Labor survey covering several hundred plants in three major industries bolster hopes of increased production through incentive systems. In all three, *The Journal of Commerce* reports, earnings of incentive workers tended to top those of time workers; and indications were that the higher earnings resulted from increased effort on the part of the workers, greater management efficiency, or both. Median differences ranged from 12.1 to 18.2 per cent.

In the machinery manufacturing industry, 135 plants located in the east North Central, Middle Atlantic, and New England states were surveyed. Average hourly earnings of incentive workers in all plants combined were higher than those of time workers in every case, differences ranging from 3.5 per cent for male gear cutters to 38.2 per cent for male packers. The median difference was 18.2 per cent.

In the cotton goods manufacturing industry, the survey covered 251 mills; and in each of the occupational classes and in each region the earnings of incentive workers were higher. In the South, the smallest difference was 8.5 per cent for male loom fixers, and the largest 29.3 per cent for male frame spinners, with a median of 17.3 per cent. Northern mills showed a range from .8 per cent for male loom fixers to 21.3 per cent for female doffers, with a median of 10.3.

In the third of the industries surveyed, primary fabrication of non-ferrous metals, the study covered several divisions of the industry: alloying, rolling and drawing of copper, brass and bronze; alloying, rolling and drawing of other non-ferrous metals; foundries, secondary smelters; machined products; and die casting. Slightly more than half the occupations showed a differential in favor of the incentive workers, with the median at 12.1 per cent. Castings cleaners paid on an incentive basis earned 31.2 per cent more than those on a time basis, and in the case of filers the differential was 43.7 per cent.

No attempt was made to evaluate the

various incentive systems, which ranged from complicated base rate and bonus plans to simple piecework. Comparison was made merely between incentive and straight-time work.

★

Dirty Work

Extra pay for dirty work, at one-half the base rate, is provided for by a recent directive of the National War Labor Board. The Atlantic Basin Iron Works, Inc., and Local 39 of the Industrial Union of Marine and Shipbuilding Workers of America (C.I.O.) are directed to include the following clauses in their contract:

a. Any employee who is required to perform unusually dirty work, involving uncleaned oil tanks, uncleaned Diesel tank pits, bilges or double bottoms, or perform any other work equally dirty shall be paid extra compensation (in addition to the straight-time or overtime pay, as the case may be) for such work at the rate of one-half of the base rate of pay.

b. Any employee who shall be required to work in any confined and poorly ventilated places where welders, burners or spray painters are working shall be paid extra compensation (in addition to his regular straight-time or overtime pay, as the case may be) for such work at the rate of one-half his regular hourly base rate of pay; provided he complies with the company's rules relating to the use of protective equipment for work done under such conditions and also that he claims such extra compensation.

c. If the foreman to whom a claim for extra compensation has so been made by any employee refuses to authorize such extra compensation, the employee may treat the decision of the foreman as a grievance. No employee shall stop, slow down, or otherwise curtail his work because of the refusal of the foreman to so authorize any extra compensation for such work.

★

Selection of New Supervisors

The article, "How to Select New Supervisors," which begins on page 66, describes a systematic method of selecting supervisory trainees from the rank and file. Developed by the Training Within Industry Service of the War Manpower Commission, the plan is a product of "administrative thinking." The first rough drafts of the program were prepared by the TWI headquarters staff, headed by C. R. Dooley. Richard S. Uhrbrock was lent by the Procter & Gamble Company to serve as consultant. Labor and management advisers of TWI offered suggestions that were incorporated in the finished program. Field men in regional offices reported on the reception of the plan under actual operating conditions. The plan has two merits: It is simple. And it has survived the friendly criticism of America's leading personnel men.

★

▶ Suggestions are being received under General Motors Corporation's wartime suggestion plan at the amazing rate of more than 10,000 a month, reports *The Journal of Commerce*. Awards are being granted at the rate of more than $1,000,000 a year in war bonds and stamps, although the maximum single award is a $1,000 war bond.

HOW TO SELECT NEW SUPERVISORS

With rapid expansion of supervisory staffs has come the urgent need for a more systematic method of selecting first-line supervisors. Casual selection must yield to critical scrutiny of all the facts about likely candidates. This article outlines an organized method of inventorying the abilities of rank-and-file workers to determine who will profit most from foremanship training. Based on industrial experience, the procedure includes participation of present supervisors in the nomination of candidates; use of an objective measure of practical ability; and acceptance or rejection of candidates by a special selection committee.

THE Training Within Industry Service of the War Manpower Commission has developed a plan that will help in selecting men and women to be trained for supervisory positions. Old-established companies, as well as newly created concerns, will be interested in the TWI bulletin, *How to Select New Supervisors.** The six steps in the plan are described under the following headings:

1. Starting the Selection Program.
2. Getting Information *about* Supervisory Candidates.
3. Rough Screening.
4. Getting Information *from* Supervisory Candidates.
5. Review of All Candidates' Qualifications.
6. Selecting the People for Training.

In an introductory statement, C. R. Dooley, Director, Training Within Industry, says:

> Every plant is always on the lookout for more supervisors. And, in rapidly expanding plants, the need for supervisors constantly becomes more acute. Good supervisors *are* hard to find. YOU HAVE TO TRAIN THEM.
>
> Management is dependent on supervisors in order to reach the big group of workers in the plant, but not every worker wants to be a supervisor. Some actually refuse to take the responsibility. They do not want to give orders to their friends. Many are incapable of becoming good supervisors even though they would jump at the chance. They cannot plan, or follow through, or adjust their thinking to supervisory problems. Some people just can't quit "doing" and begin to direct *others* "to do." Poor judgment, slowness, indecisiveness, inflexibility, or annoying mannerisms prevent them from ever becoming effective supervisors.
>
> Where, then, *do* we find men and women to train as supervisors? They must be *discovered* among the ambitious workers who are willing to pay the price of leadership, and who can work well with their associates. You spot them in the rank and file of *your own plant.*
>
> Many plants give careful attention to the selection of top supervision, and "just

* Available without charge from the district offices of Training Within Industry.

appoint" quite casually the first-line supervisors, the ones who really are in closest touch with the workers who get out production. Then, too, first-line supervisors form the group from which higher supervisors are most often selected. The greater a supervisor's responsibility, the more costly are the penalties if the man is not really fitted for supervisory work.

Management delegates much of its responsibility to supervisors; hence, initial selection is of prime importance. Selection of men and women for supervisory positions is a definite responsibility of management, but assistance can be gained and the selection procedure improved if the recommendations of present supervisors and, sometimes, of both the union and individual workers are enlisted.

To find one leader, you must get the facts about a number of persons. You must weigh and decide, because a mistake is costly. Personal prejudices and favoritism must be avoided. You must find a potential supervisor to be trained. And, finally, give him a feeling of PERSONAL SATISFACTION in his new work.

The success of the plan depends upon the advice and cooperation of the present supervisors in the organization. They suggest the names of workers in their departments who they think might make supervisors of small groups of employees. Present supervisors have had a chance to observe the men and women who seem to have the knack of planning, and who are friendly and cooperative with others in their departments. They are the ones that other workers go to for counsel and assistance. The supervisors, of course, suggest the names only of people from their own departments whom they have had a chance to observe on the job.

Someone in the organization who is familiar with the selection and training problem should be assigned to do the preliminary setting-up of the program. The supervisors should bring their lists of names to him and talk over the reasons why they think each one might be a good possibility to train for appointment as a supervisor. Of course, some names will be eliminated as a result of that discussion. But the majority will remain.

A group of three men should review the qualifications of the workers being recommended for training as supervisors. It is suggested that an operating man, a personnel man, and one other representative designated by management should compose this group. These three men should weigh such considerations as whether the candidates have had the right kind of experience for the job and also whether they handle their own personal affairs intelligently and are willing to take the responsibility of supervising others. Any leadership qualities that they have demonstrated, such as ability to break in new men, would be very much in their favor. And, of course, they ought to be mentally alert and willing to learn, particularly if the company decides to invest time and money in their training.

INFORMATION FROM PERSONNEL RECORDS

Employee records and reports on health or absenteeism should be consulted for any additional information they may provide. Perhaps some of the most likely prospects for supervisory training have certain health problems or are limited by home conditions that would make it undesirable to put them on night work, for example. The personnel records should be inspected to insure that important information already available regarding the persons being considered is not overlooked.

The next step in the plan provides for bringing the supervisory candidates together for a short meeting. This should not take more than three-quarters of an hour or an hour at the most. At that time the need for training new supervisors should be stated. These men can be told that they are being considered as possible supervisors. The policy of planning for the future should be emphasized. The men and women in the group may be asked to fill out a short, fairly simple test of practical ability. The supervisors of these workers, in making their nominations, will have considered primarily how skilful the workers are and how well they get along with others in the department. But, in addition, it is highly desirable to determine whether these supervisory prospects can compute overtime pay, hours, cost of materials, etc., and do the other calculations necessary to prepare the supervisors' daily and periodic reports. Also they should be sufficiently intelligently to understand company plans and policies well enough to explain them to the employees who may be working under their direction.

TESTING THE CANDIDATES

A carefully worded paper test, requiring not more than 30 minutes' time (and pitched at about the grammar school level of ability), will not scare the men. It may prove highly useful in a number of cases that will come up for consideration. A certain amount of literacy and arithmetic ability are prime requisites for supervisory positions today. We tend to overestimate the abilities of our associates. A test is good insurance. The TWI bulletin, *How to Select New Supervisors,* contains sample test items, and it also embodies suggestions on formulating your own test if you do not wish to use one that is commercially available.

After obtaining information from the supervisory candidates by means of the test, the selection committee reviews all the facts. The sole function of this group of three men is to accept or reject any man or woman on the list as a prospect for supervisory training. Of course, it would be desirable if the decisions could be unanimous. However, it is a good rule to say, "When in doubt, don't."

As a result of all this, a list of supervisory candidates would be available whose records had been examined very carefully and who had been selected by a committee of three as the kind of workers who would make good as supervisors. The best of the group would be available for immediate appointment as supervisors. They would receive their training "on the job." A reserve pool of those who could be appointed to fill additional supervisory jobs as they opened up would be available.

This whole plan offers a good opportunity to inventory the abilities of the best workers and to recognize and reward those with outstanding ability by giving them opportunities to become leaders in their departments.

1. STARTING THE PROGRAM

When a management group has decided to study its rank-and-file employees in order to discover the few who may have supervisory ability, the present staff of foremen, supervisors and superintendents should be called together and a high-ranking official with considerable prestige in the group should talk to them. In one company that took the six steps recommended in the TWI plan, the details were handled in the following manner:

The works manager said to his present supervisors:

"All of us have a responsibility for constantly keeping our eyes open for workers who can be trained to supervise others. Some of these men and women may have limited supervisory ability and can only be expected to direct the work of three or four people. Others may be able to handle a greater number of employees, but to date have not had the opportunity to gain the necessary experience. We shall not know what their possibilities are until we train them and give them opportunities to use their abilities and training.

"We are meeting today to discuss and think through the best method for discovering those workers who can be trained as supervisors. By 'workers' I mean both men and women. We need women supervisors as well as men. It always has been part of our job to be on the lookout for supervisory material. We all have been doing something along that line in the past. Now we want to do this more systematically because the number of potential supervisors whom we can discover by haphazard methods will not be sufficient for our needs.

"As you know, we are hiring more people, and that requires more supervisors. Also, you and I know that we can't go outside and hire supervisors who are familiar with the details of our business. We must discover *within our own organization* men and women who can be trained to do

supervisory work of the kind that you are doing. Therefore, I repeat, it is part of our job to be on the lookout for workers with the right combination of ability.

"In nominating employees for consideration, you will be helping the company to handle a very difficult and pressing problem. And you will be helping yourselves because we can spread the supervisory load that all of us are now carrying. I am sure that each present supervisor could use an able understudy if he could find one. In recommending workers to be considered for supervisory training you will not injure yourselves in any way. You will not jeopardize your job. In fact, you will be making things easier for yourselves.

"The plan that I have to suggest is really a very simple one. Let each one of us look at the men and women in our departments and ask ourselves the following question: 'Is there anyone in the group who might make a good supervisor if he were properly trained?' I suggest that you consider all the people in your department. Don't rule out any of them at this point but *don't talk to them* about this subject just yet. Think about them. Jot down the names of the ones you would like to suggest or recommend.

"What qualifications should you look for in nominating men and women for supervisory training? In the first place, consider the experience that they have had, not only in your own department but elsewhere. Ask yourself, 'Are they level-headed, intelligent, trainable, and willing to learn?' You are all reasonably familiar with the personal characteristics of supervisors who are doing a good job in this plant. Look for those abilities among the workers and consider them in weighing their possibilities as supervisors.

"Some workers have demonstrated leadership qualities. They are good at teamwork. Give this point careful consideration. Also, they are acceptable to their associates and to present foremen and supervisors. The employees that you recommend should be willing to assume the responsibility of supervising others. They should have the reputation of handling their personal affairs intelligently, and they should have given some evidence of being able to adapt themselves to changes. They are honest. Those who lack one or more of these qualifications probably are doubtful prospects.

"Some of you may have one or two names to suggest. Others may have several. Some of the employees on your list may not have had very much schooling, but they may possess leadership qualities or work experience or a knack for getting along with people that we should not ignore.

Give this your very best thought and attention and bring in your list by noon on Thursday."

2. GETTING INFORMATION ABOUT CANDIDATES

When one of the supervisors brought in his list, the names that he suggested were discussed with him. The director of personnel, who was in charge of the supervisory selection program, examined the list *without comment* to familiarize himself with the type of employee being recommended. He avoided any critical query as to why certain names were on the list while others were omitted.

After looking at the list, he handed it back to the supervisor and asked him to discuss the strong and weak points of the first man on the list. They touched on such factors as the man's work with the company; length of service; the kind of work that he had done formerly; general education; understanding of the company's policies and objectives; ability to plan his own work; his relations with his co-workers and his supervisors; general punctuality; health; habits; facts regarding the attitude of his family that would make him a satisfied or dissatisfied person; leadership traits that he had displayed, such as the organizing of bowling teams or other recreational activities; membership in clubs and organizations that indicated his social interests; experience with him in breaking in new men; and how he had handled his personal affairs.

The supervisor was encouraged to discuss frankly and fully all the background facts about the worker that had convinced him the man might become a good supervisor. The personnel man listened and did not dispute any of the remarks that were made. *This was a fact-finding session—not a debate.* Occasionally he offered an opinion, or an additional item of information, somewhat along these lines:

"Perhaps you did not know that such and such is the case regarding this man. In view of those facts, I wonder if we should keep his name on the list or perhaps drop it off at this time?"

Some names were withdrawn by the supervisor at this stage. There was no arbitrary deletion of names in such manner that the supervisor would feel he should never have suggested the man in the first place. The decision as to whether to retain each worker's name on the list or to eliminate it was mutually arrived at. The names of all employees were retained where their cases seemed to warrant further consideration. This same procedure was followed in discussing the recommendations of the other supervisors.

3. ROUGH SCREENING

After the individual conferences with supervisors were completed, all available personnel records of those remaining on the lists were assembled. Such records included: application blank, any ratings that were available, salary status, health and safety reports, and written comments about the men or their work. The director of personnel evaluated the personnel records of each of the men recommended and sought to unearth facts that might appear to be disqualifying.

After the records had been examined, the committee responsible for deciding which workers should be included in this program had its attention called to the personnel facts that seemed worth noting. A few of the workers under consideration, who were not known personally by the committee members, were interviewed or observed on the job. In the light of additional evidence, certain names were dropped from the list. The men and women whose names remained were called together for the purpose of obtaining information from them.

4. GETTING INFORMATION FROM CANDIDATES

The workers whose names were retained to this point obviously represented a fairly good selection of candidates for supervisory training. However, all the information about them had been obtained from department heads and others who had observed them and formed opinions about their potential supervisory abilities.

To supplement this data, it is good personnel practice to get some facts *from the employees themselves.* After all, they have a stake in the outcome of the selection procedure. Accordingly, the immediate supervisors of the men under discussion informed them individually that the company was considering its needs for additional supervisors in the future. Each man was told that he had been recommended as a possible candidate for supervisory training because he seemed to have some of the essential qualifications. He was told that the works manager had called a meeting of a small group of workers to discuss the company's plan for training a few additional supervisors. The time and place of the meeting were stated clearly to the man. The supervisors were careful to avoid formality in giving this information; they did not want to disturb the men.

The men were notified about the meeting an hour or so before it was scheduled to begin. (It is well to avoid undue discussion and speculation regarding its purpose.) If the meeting had been announced before a lunch period or on the preceding day, the men would naturally have talked to

their friends, who in turn would have wondered why they weren't selected also. Little time was allowed for rumors to get started.

The meeting was held in the cafeteria. The works manager, who was to speak to the men, was not in the room when they arrived. By being permitted to assemble without his presence, they had an opportunity to discuss the purpose of the meeting among themselves.

THE WORKS MANAGER'S TALK

The meeting was opened promptly by the director of personnel. The works manager addressed the workers somewhat along the following lines:

"I am sure you men and women have been wondering why I asked you to come over here this afternoon. The purpose of this meeting is very simple. As you know, we are constantly in need of additional supervisors to train new people in the details of our business and to supervise our growing departments. Our company is looking to the future. We schedule the manufacture of our materials so that our products are made according to specifications and on time, and in the same way we must schedule the training of supervisors to meet our needs.

"Someone has thought that each one in this room might become a good supervisor. Somebody has suggested your name, and that is why you are here. However, this doesn't mean that you are going to become a supervisor immediately. Our plan is to get a few more facts before making some important decisions. We need to decide whether you are ready to assume additional responsibility and whether we should invest time and money for additional training for you at this time.

"Some of you may have had some supervisory responsibilities formerly, such as helping to train new people in the work of your departments. That is one of the responsibilities of supervisors. But there is much more to supervision than that. The supervisor is concerned also with costs in his department and must be able to keep accurate records not only of costs but of the materials that are used in the department. He is concerned with the health and safety of the workers and with other factors that it is not necessary to go into at this time. You might call these the 'headaches' of the supervisor. Further, there is the non-financial reward of helping to get out the products of the company and the financial incentive of making a little more money than formerly.

"We are looking to this group here to provide us with some more supervisors. But it is necessary for us to have a few additional facts. I have a form here that I would like you men and women to fill out in order to give us some of those necessary facts. [The works manager indicated the practical test of ability.]

"This form isn't a particularly new or difficult one. You all filled out forms for us when you applied for a job, and you will have to fill out forms for other purposes from time to time. I can tell you that one of the purposes of this is to give us some idea of how well you might be able to keep some of the necessary records in a department if you become a supervisor.

"We are not going to make a decision this afternoon as to whether to put you in training for a job as supervisor. It takes a little time to consider and sift all the facts. We must consider the kind of work that you have been doing and all the facts that have accumulated around here regarding each of you. Then a group of us will sit down and discuss those facts thoroughly.

"I can tell you now that not everyone in the room will be assigned to a supervisory job in the immediate future. But everyone will be considered. I don't want to call this a race or competition, but perhaps it does have a little of that in it. As you know, every man does not win every race he enters. But if you are not selected for training at this time you can be sure that you will be none the worse off because you came over here this afternoon. The fact that your record is being reviewed and we are getting better acquainted with you will be helpful in various ways in the future."

ADMINISTERING THE TEST

At this time the practical test of ability was distributed. Each man was supplied with one of the test forms, a blank piece of paper for figuring, and a pencil. The cafeteria where the meeting was held proved an excellent place to conduct the test.

Men are naturally interested in test forms of this kind and like to retain an extra copy or two if they are available to show to their friends. It is the responsibility of the person conducting the meeting to see that no copies of the form are circulated in the plant. Accordingly, test copies and men are counted. When requests were made for copies of the form, they were refused on the ground that management might wish to use the same form with other groups and thus did not consider it advisable to release it for circulation.

It is recommended that if any candidate decides to "give up" on the test, the person in charge of the testing program go to him and suggest in a low voice that he continue trying; that he may do better at this than he thinks. If he insists on stopping, he should be asked to spend his time reading over the questions and considering them until several of the men are finished. He should not break away or be excused from the group at least until several other men are ready to go.

The test papers were collected upon completion, and the men returned to their work. The papers were scored and arranged in order of score from high to low. Where several persons made the same score, their names were listed alphabetically. The list of names ranked in terms of scores indicated the relative differences in ability to do simple arithmetical computations. This information became part of the data to be considered in reviewing the records of the men. Ordinarily, those making higher scores would be considered more favorably than those making the lower scores.

If you already have a testing program in your plant, either for job applicants or for selected groups of employees, you should continue your current practice in regard to the reporting of scores. If this is the first time testing of employees has been undertaken, no test results should be posted on bulletin boards or released to foremen or others. This information is primarily for the use of the committee appointed to select workers for supervisory training.

If an employee requests his test score from the person in charge of the selection program, he should be advised not to attach too much importance to the test as it is only one of many factors that the committee is weighing. He should be told that the committee will be glad to show him his own paper if he will defer his request until the final selections have been made and the results of the committee's work announced. Then, if the man returns, *he should be shown his own paper and no other.* His errors should be pointed out; and though he can observe his total score recorded at the top of the paper, no comment need be made about it. Under no circumstances should he be given the average score for the whole group or be permitted to see the papers of other candidates. The impression he should take away with him is that the company has high standards of selection and that his ability has been considered carefully and fairly.

The scored test form was included in the individual's folder, along with other pertinent records, such as ratings, production data, etc., that had come to light since the initial evaluation of the personnel records.

5. REVIEW OF CANDIDATES' QUALIFICATIONS

The group of three men whose assignment it was to review the records met and discussed each man's case separately. His test papers and personnel records were examined by these three men, and each fact that appeared important was considered.

A tentative decision was made regarding each candidate—whether to recommend him as a potential supervisor or to eliminate him from the

group. When all three members of the committee agreed that the man's *total record* justified supervisory training, they approved his name.

Somewhere along the line, because of relatively unsatisfactory personnel history or a low test score, doubtful cases began to emerge.

6. SELECTING THE PEOPLE FOR TRAINING

As a result of this scrutiny and discussion, the data fell into three classifications: (a) those on which there was unanimous agreement that good supervisory material was indicated; (b) doubtful cases; (c) those which the members of the reviewing group agreed were not ready for supervisory training at this time. The committee signified its willingness to certify the first group for immediate training and appointment, and to classify the second group as possible but somewhat doubtful prospects.

The TWI bulletin, *How to Select New Supervisors,* sounds a note of warning at this point: "This method of picking men indicates who will profit most from sound supervisory training. The next steps are to place him properly and see that he gets good training. Remember that you do *not* have a ready-made supervisor. Some of the men may be appointed supervisors at once and get their training on the job. Others may be put in pre-supervisory training courses. Still others will be held as a reserve or pool. And there will be some who you know *never* will be appointed at all. All these candidates must be told *just where they stand.*

"The 'supervisory pool' must not be built up beyond the number needed within a reasonable time, such as three to six months. If there is not any turnover in the pool, the whole selection plan may be unpopular.

"In order to follow the supervisory pool principle, it is necessary that: (a) management have some idea or estimate of the number of supervisors needed over some such period as three months; (b) all promotions to supervisory positions come from the pool.

"If you do not have many supervisory positions to fill, it probably will be best not to set up a 'pool'; for if there are no appointments made from it in a reasonable length of time, the men will be more dissatisfied than if they had been told that someone else got the job and no more are open.

"But, in *any* plant, it will pay to anticipate needs and go about supervisory selection in an organized manner rather than 'getting a man for the new shift tonight.' And, for *any* opening, it will pay to look at the qualifications of more than one man."

* * * * * *

"Planning and foresight will pay dividends. The whole purpose of

this plan for picking men to be trained as supervisors is to identify the steps that will inventory the abilities of workers, so that 'hidden talent' is not overlooked. A man's appearance and manner may not be impressive, yet he may have excellent supervisory ability.

"*No one person* in the plant can possibly have all of the essential facts necessary to make 'spot' decisions regarding the potential abilities of a man. Two or three men, familiar with the problem and acquainted with the men available for promotion, can do a better job of selecting than one can alone. The judgment of one supplements the others.

"A review of the record and a discussion of the needs and facts *prevent* hasty decisions. Men with supervisory ability *can* be found among rank-and-file workers. That is the major source of supply. The man who will make a good supervisor is there. This method gives you a simple way to *turn the searchlight* on the group and to find him."

What do management and labor think of this method of selecting supervisors? Before the TWI Bulletin was released, copies were sent to a representative group of men for their comments. The following excerpts from letters received by Training Within Industry headquarters indicate the reception the plan is being accorded:

> In response to the questions asked in your letter as to the adequacy of your proposed approach to this problem, it is my opinion that your method appears to be quite workable and sound. It seems to offer a fair method of evaluating ability of workers who have been nominated for supervisory positions. The psychological effect of the establishment of such a method of selecting supervisors is in our opinion most important. The knowledge that such a method will be employed conduces to more careful consideration in the selection of men for promotion to supervisory brackets. The possibility of hasty, ill-considered promotions, with the adverse effects that often ensue, is markedly lessened. I am sending a copy of this to our supervisory rating board for its consideration.—*James R. Moore, Vice President, Moore Dry Dock Company, Oakland, Calif.*

* * * * * *

> It would be my suggestion that wherever companies with collective bargaining contracts are in need of expanding their supervisory forces, it would be most desirable to enlist the active interest, aid and cooperation of the appropriate union officers and committeemen in this effort. We have companies under contract with us that at regular intervals notify the local union officers in the plant of any vacancies in their staffs of foremen and ask the union to make suggestions to them as to who among the ranks of the employees are best qualified for consideration for such positions. I have been told personally that in one or two instances management found these suggestions to be most useful and that the company had not appointed anyone other than those suggested or recommended by the committee.—*Clinton S. Golden, Assistant to the President, United Steelworkers of America, Washington, D. C.*

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> Every industrial organization recognizes the importance of the selection of super-

visory personnel, and because of the enormous expansion of industries at this particular time, it is to be expected that the problems involved in the selection of supervisors should be aggravated.

I am happy to know that TWI has been assigned the job of devising a plan to assist industries throughout the nation in formulating a good program in this direction.

My opinion, after going over the Bulletin, is that we can congratulate Chan Dooley and his staff on an excellent plan and consider the suggestions of high quality.

I cannot find any step in this plan that is not basically sound. While in many instances it should be modified to meet specific and local needs, the over-all plan is eminently satisfactory.—*Svend Pedersen, Director, Education Department, Lockheed Aircraft Corporation, Burbank, Calif.*

* * * * * *

I have read this Bulletin carefully and, in my opinion, it offers a very good plan for the selection of supervisors. It seems to me that our difficulty would be to get employers to go along with us in the application of the plan. However, I will make use of this Bulletin with the employers we have contracts with and see if we can get them to agree to go along with us on it.—*Charles Sehl, Business Agent, District No. 1, International Association of Machinists, Philadelphia, Penna.*

* * * * * *

Our vice president in charge of manufacturing, our superintendent, and I myself have read and discussed several times the draft of the proposed plan and instructions on *How to Select New Supervisors,* and we cannot find anything we should like to change. To the contrary, we are all enthusiastic over the simplicity and clearness of this plan and feel that we can be benefited by a procedure as clear and comprehensive as this, although ours is a more or less established business that is not expanding so rapidly as the majority of those that you serve.

I think this could be adopted advantageously as standard procedure in peacetime in businesses such as ours, because I do not think we are always as careful as we should be in collecting information about the capabilities of candidates for supervisory jobs. In every organization some prejudices and favoritism exist, and these very often cause us to be somewhat blind as to a candidate's total capacity for a given job.—*Alonzo G. Decker, Vice President and General Manager, The Black & Decker Manufacturing Co., Towson, Md.*

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I have read the Bulletin very carefully and can find nothing to criticize. The employer should adhere to this sample form at this time.—*J. Scott Milne, International Vice President, International Brotherhood of Electrical Workers, San Francisco, Calif.*

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I handed your letter of January 14 and Bulletin No. 4-E, *How to Select New Supervisors,* to Mr. George C. Willis, our Industrial Relations Manager, for his comments. I believe your inquiry can best be answered by quoting Mr. Willis' report to me:

"I have read over carefully the program suggested for the selection of new supervisors. We, in upgrading, have had experience with some of the steps and suggestions advanced here, but we have not by any means covered all the ground outlined in the Bulletin. Obviously something of the sort has been badly needed in industry for years. I feel the progressive steps outlined in this selection procedure are practical and extremely worth while—so much so that I am holding one of the copies of the

Bulletin you sent me so that we can inaugurate this program at once. Intelligence tests suggested should certainly be an aid in judgment and selection. I believe that if the method outlined is applied intelligently in any plant, and the steps are adapted to the industry concerned, it should work very satisfactorily."

The reactions of both Mr. Willis and myself indicate your Bulletin does not need criticizing.—*Thomas Roy Jones, President, American Type Founders, Incorporated, Elizabeth, N. J.*

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I really believe that the method you have devised covers every phase of the procedure necessary to find employees who are best suited for supervisory training.—*H. S. McIlvaigh, Secretary, Tacoma Central Labor Council, Tacoma, Wash.*

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I like your Bulletin No. 4-E very much. It appears to me a sound and commonsense approach to the problem.—*F. J. Roethlisberger, Graduate School of Business Administration, Harvard University, Boston, Mass.*

Forecast of Training Needs

TEN million persons will be enrolled in training courses for war industry and agriculture during the fiscal year 1943-44, according to the War Manpower Commission. Probable training needs, as forecast by the Commission's Bureau of Training, follow:

Inexperienced workers (pre-employment training)	1,300,000
Employed workers:	
Supplementary training	2,000,000
Training of supervisors and foremen:	
Job instruction	1,300,000
Job methods	1,800,000
Job relations	1,800,000
Professional and technical workers	800,000
Agricultural workers	1,000,000

In-plant training of production and skilled workers, including apprentices and advancing workers, will also be required in 100,000 plants.

The total of 10,000,000 needed courses does not necessarily represent that many separate individuals. A new worker may take pre-employment training for a basic skill; he may then undergo brief supplementary training for a specific factory operation; he may then, if he proves capable, pass through various types of supervisory training.

The army of inexperienced workers entering essential industry who will need training will include both new workers and transfers from other industries. Among them will be women of various ages, physically handicapped persons, and many older men. These persons will require what is known as "pre-employment training" or they must be given "pre-production training" in a vocational school or in the plant itself after they have been put on the payroll but before they go on the production line.

—*Industry* 7/43

THE TEN-HOUR WORKDAY IN FACTORIES

The 10-hour, two-shift schedule, where feasible from the viewpoints of production and morale, offers wide possibilities for spreading available manpower over a greater area. In this timely study the U. S. Chamber of Commerce answers management's questions on the subject by citing the experience of companies which have tried the plan, with comments, both favorable and unfavorable, from the executives concerned. The survey was made by the Chamber's Department of Manufacture, of which T. W. Howard is manager; and the results were compiled by Edmund Robertson.

SOME industrial executives have maintained that the greatest total production can be secured by using two 10-hour shifts rather than three shifts of eight hours per day. In an effort to determine the truth of that assertion, the Department of Manufacture of the U. S. Chamber of Commerce addressed an inquiry to 479 selected manufacturing companies. Companies in the metal working industries were chosen primarily, since they are currently at a high level of activity and are located largely in areas where labor shortages exist. These manufacturers, too, are mostly engaged in war production.

Replies were received from 116 of the 479 canvassed. Of these 116, 55 reported no experience with the two 10-hour shift schedule or experience so limited as to be inadequate as a basis of conclusions.

Of the remaining 61 who have operated on the 10-hour day, two-shift basis, 48 are still doing so and 13 have abandoned the schedule. Some of those no longer operating the two longer shifts had adopted the plan as a temporary measure, returning to the more conventional schedule as conditions changed. Detailed replies from those who have discontinued the two 10-hour shifts are incorporated in the general figures which follow. In addition they will be analyzed separately at the end of this summary.

REASONS FOR ADOPTION

The chief reason given for adopting the two 10-hour shift schedule was the prevalence of manpower shortages. Altogether 47 companies gave this reason. Scarcity of supervisory help was specifically mentioned 24 times by this group; scarcity of skilled labor, 17 times; and scarcity of labor generally was reported by 16. Some of the 47, of course, named more than one type of manpower deficiency.

Three employers preferred the two 10-hour shifts because the unscheduled time was needed to provide for maintenance and repair, "bottleneck" production, and other emergency situations. Six companies were

motivated by a desire to increase employees' "take-home" pay by means of the overtime involved. Other reasons given were:

"In order to eliminate third-shift inefficiencies."
"Because employees disliked the third shift."
"In order to eliminate division of responsibility."
"To increase production."
"Reduced activity."
"Combination of need for increased production and shortage of materials."
"To eliminate temporary production bottleneck."
"Standard practice in the industry."

EFFECT ON TOTAL PRODUCTION

The question was presented: "Does your experience reveal that you had greater or less *total* production from your plant (using the two 10-hour shift schedule) than with any other work schedule?" Replies to this question totaled 33, of which 20 reported more production, and 13 reported less.

WEEKLY SCHEDULES REPRESENTED

To ascertain specific weekly schedules in use in connection with the two 10-hour shifts, three possible combinations were listed for checking, and a line reading "other schedules" provided for a fourth choice. Replies indicated, however, that the schedules listed were not typical of those used. For summarization, therefore, a different breakdown is used, as shown below —the weekly schedule is set forth, followed by the number of companies reporting that schedule in use:

Five 10-hour days, Monday through Friday, with no production on Saturday and Sunday—7
Five 10-hour days on a rotating workweek basis so that production will be continuous—5
Five 10-hour days, Monday through Friday, eight hours on Saturday, with no production on Sunday—9
Five 10-hour days, Monday through Friday, five hours on Saturday, with no production on Sunday—10
Six 10-hour days, Monday through Saturday, with no production on Sunday—14

Other schedules included "five 10-hour days, Monday through Friday, with no production on Sunday" with three variations of hours (four, six and nine hours) on Saturday. Four companies have used one or another of these schemes. One manufacturer reported the use of five 10-hour days with 10 hours' operation on alternate Saturdays, no production on Sundays, and no production on the remaining Saturdays. One company operated three 10-hour days, two eight-hour days, and five hours on Saturday with no production on Sunday.

OUTPUT PER MAN-HOUR AND PER MAN-WEEK

"Will output per man-hour and per man-week be increased or decreased through the use of the 10-hour day?" In reply to this question, 23 companies indicated such output would be increased; 16 said a decrease was to be expected; and nine reported no change as a result of longer shifts.

EXTENT OF REST PERIODS

Of those who reported on the extent of rest periods, nine companies said none were needed. In addition, six employers reported none were required except in cases where the nature of the work produced unusual fatigue and that in those cases special arrangements had been made. Five more executives described lunch periods under this heading, and reported no other rest arrangements. An additional report described provision for two half-hour lunch periods per shift.

Varying schedules of rest periods, each totaling 20 minutes per shift, were reported by 14 establishments altogether. Of these, 12 provided a 10-minute rest period during each half shift; one allowed two five-minute periods to each half shift; and the remaining company granted one 20-minute period per shift. Three companies replied that they provided a rest period each morning and each afternoon without indicating the length.

Other formal arrangements included "one 10-minute rest per shift" and "18 minutes of rest during each five-hour stretch," each scheme being reported by one company. One reporting company grants 10 to 15 minutes in the morning and afternoon to girls at bench work, with provision for rest periods as necessary on a staggered basis for women employed at machines. Another executive suggested rest periods should be given at the end of five or six hours of continuous employment.

Two companies permit employees to take time during the morning and afternoon (and presumably during each half shift for the night force) to purchase food and refreshments. In two other instances several smoking periods are allowed at the discretion of the individual with a register to avoid abuse.

EFFECT ON MORALE

As to the effect of a switch to the 10-hour shift on general morale, 24 executives said the reaction would be favorable; five reported it would be unfavorable; and 11 thought morale would be "satisfactory" under the schedule.

Six companies in all agreed that higher take-home pay as a result of the 10-hour shift contributed greatly to an improvement in the morale of the workers. In this connection, however, executives of one company

pointed out the danger of hastily adopting two 10-hour shifts to meet a particular situation because of the consequent reaction of the workers when the schedule was no longer feasible. They found considerable resistance on the part of the operators, who looked at a change from a 10- to an eight-hour shift as a reduction in pay.

EFFECT ON WOMEN

We come now to a consideration of the effect on women of the two 10-hour shift schedule. Executives of 49 companies answered this question in some manner. Of this number three reported "no experience"; 12 indicated that women were not employed on the 10-hour schedule, and all but three of these named state legislation as the reason. It may be presumed that this situation prevails in other cases where the fact was not specifically mentioned.

A number of returns provided answers to one or more of the detailed questions under this heading:

Terminations: As to the anticipated decrease of terminations as a result of the longer weekend, executives of 10 reporting companies expected this result would follow, and 11 thought it would not.

Home Work: Ten of those replying indicated their belief that women could keep up with their home work in spite of the increased hours, but eight thought it would not be possible for them to do so.

Fatigue: "Would the fatigue of 10-hour days be too much for women?" Eight replied "no;" five, "yes."

Child Care: The replies to the question "What about child care?" indicate that some recognition has been given the problem but reflect little in the way of concrete solutions. One company, which is just beginning to encounter the problem, is participating in a cooperative child care program under State Aid and the Lanham Acts. This company noted a "reasonable initial acceptance of the program in its city. Three others report that local agencies provide some child care. Still another replied that it "used nurseries." One company said other members of the workers' families cared for the children.

Four companies were aware of no problem in this connection or considered the difficulty "negligible." Other comments on child care were:

"Much easier to secure child care on eight-hour shift."
"Question has not arisen in connection with 10-hour shifts."
"Often a reason for quitting."
"We have had women quit to take care of their children, but no more now than with three eight-hour shifts, seven days a week."
"Real problem resulting from 10-hour day for women would be transportation time—early morning rising and late arrival at home."

"Very important. Is being worked on now. Doubt if anyone has complete answer."
"Most difficult problem in connection with employment of women."
"Children neglected."
"Definitely a problem."
"Bad."
"Insurmountable problem."

WHY SOME 10-HOUR PLANS WERE ABANDONED

In order to get a fuller picture of the reasons why those who abandoned the plan did so, it seems appropriate to consider separately the replies of each of them to all the questions put forward.

A Michigan manufacturer adopted the two 10-hour shifts, six days a week, in the toolroom only, the occasion being a lack of sufficient toolmakers for the work at hand. Efficiency showed a decline after two weeks and continued to worsen until, at the end of seven months, operation on the basis of three eight-hour shifts was resumed.

A California company started working five 10-hour days on a rotating basis because of the need for increased production shortly before Pearl Harbor. This organization found production and morale improved, and man-hour output increased. Though not indicating directly whether women were employed on these shifts, the management expressed its belief that the fatigue *would* be too much for women and would be considerably greater than with the eight-hour shifts. This company dropped the arrangement as a result of negotiations with a labor union.

A food manufacturer adopted a 10-hour, five-day schedule to handle what was believed to be a temporary increase in the work load (it is not clear whether it was previously operating more than one shorter shift), but eventually concluded that, while a longer week was required for adequate production, the necessary output could be achieved more efficiently with three 7½-hour shifts.

A company manufacturing electrical products was faced with a need for increased production and at the same time with a scarcity of skilled workers. It began working two 10-hour shifts Monday through Friday with four hours on Saturday. Total production decreased, but the management attributed the decrease to new workers' inefficiency, although it believes fatigue from long hours does reduce man-hour output (rest periods were given only in cases of exceptionally strenuous or monotonous work). As to women, this company doubts that terminations would decrease; thinks that the shorter shift is important to enable women to discharge their home duties, that fatigue would be excessive for women, and that child care would create a problem. As the new workers gained experience, they became

more efficient; and, at the request of the employees, the 10-hour shifts were discontinued.

An ordinance plant adopted the schedule of 10 hours without rest periods, Monday through Friday, with five hours on Saturday because it was unable at the time to reach full three-shift production. Later the plant went to three-shift operation, and the 10-hour shift arrangement was abandoned. The management is not sure, however, that the three-shift schedule gives proportionately greater output than the two 10-hour shifts, and reports evidence of improvement in general morale under the 10-hour plan.

Another establishment used the rotating workweek of five 10-hour days, with rest periods of 10 minutes each half shift. Total production proved to be not so great as with the three eight-hour shifts, and the company could discern no effect on the general morale. In reply to the output per man-hour question executives said, "We feel from our 10-hour day experience that the three eight-hour shift schedule is preferable." Among women this company reported a greater amount of absenteeism with the 10-hour schedule, no increase in terminations, and excessive fatigue. Moreover, it was found to be much easier to secure child care on the eight-hour shift. When the flow of materials increased and additional manpower became available, the plant was returned to three eight-hour shift operations.

A steel corporation operated the 10-hour shifts with two 10-minute rest periods per shift (no production Saturday or Sunday) in one department only to eliminate a production bottleneck. Less total production was achieved; output per man-hour decreased; and a detrimental effect on the morale was evident. There was no decrease in terminations by women, and fatigue was found to be excessive. There were no conclusions as to the questions of home work and child care.

A New Jersey corporation adopted a schedule of 10 hours per day (no rest periods) Monday through Friday, and eight hours on Saturday. It abandoned the 10-hour plan because of a definite decrease in output in the ninth and tenth hours, and found no appreciable drop in production with the change to the eight-hour schedule.

A Pennsylvania manufacturer operated a plant on the basis of two 10-hour shifts (allowing rest periods only on especially strenuous jobs) in 1929 when it was standard practice in his industry for mills that were not continuous operating units. The company worked five 10-hour days Monday through Friday. Output per man-hour and per man-week decreased, and total production was not so great as with three eight-hour shifts. As to morale, the men were reported as preferring the longer days and

consequently shorter week. This establishment abandoned the 10-hour shifts during the depression in an effort to spread employment.

Four other companies abandoned the 10-hour shifts because of a noticeable decline in production. One of them also found that the men could not stand the heavy hot work for 10 hours.

ADDITIONAL COMMENTS ON TEN-HOUR WORKDAY

Those who favor the 10-hour day offered a number of different reasons for their viewpoint.

"It is our belief that the greatest production and greatest economy in war plants can be secured by using two 10-hour shifts," one company wrote. "In our three main plants, working 100 per cent on war orders, we are operating on that basis."

A company now working five 10-hour days a week and 10 hours on alternate Saturdays reports: "We are starting a split-shift arrangement whereby two people will team up to put in a full shift. Very promising."

A New England company working 10 hours five days and five hours on Saturday does so because it is "impossible to get three-shift system, because of the workers' disinclination to work on third shift." Executives think the schedule the most practical.

A Connecticut enterprise operating on a rotating week basis finds greater production and less absenteeism with that schedule. Another, which found a trend to increased absenteeism with the 10-hour shifts, arrived at the most satisfactory balance of maximum production and minimum absenteeism with a compromise schedule. This plant operates three 10-hour days, two eight-hour days, and five hours on Saturdays. The effect on morale and production is stated to be good.

A tool manufacturer stated: "We found that it was difficult to place responsibility. We believe that the effect on the general morale is good, probably due to increased earnings without excessive hours of work." Six 10-hour days are worked in this instance.

One executive stated his belief that, "two 10-hour shifts are better than three eights for short periods, but eight-hour shifts are better over a period of several months."

An electrical manufacturer makes the following interesting observations: "We get far greater production by having two long shifts with skilled men than we would by breaking in a temporary third shift from unskilled men. On the other hand, where we have steady work our three eight-hour shifts do equally well, but no better, than two long shifts. I think that girls are not so adaptable to long shifts as men. We rarely try long shifts with girls.

"I do not think there is much sure proof that the output per man-hour and per man-week is increased or decreased through the use of the 10-hour day. When jobs are hard to find, men work hard. When jobs are plentiful, men work easy. I am not a slave driver and I would rather have them work easy and steady than too hard. I want them to enjoy life. I think our men were just as happy and just as efficient in the old 10-hour days as they are in the present eight-hour days. However, I am very glad to see them get out after eight hours and have some fun. I do not honestly believe there is much of any efficiency question involved."

Aid for Employee Inventors

AN employees' patent remuneration plan, under which workers are given an equitable share in any income derived from an invention through the licensing of outside manufacturing rights, has been instituted by Glenn L. Martin Co., Baltimore. Although the plan has been in operation only a short time, seven Martin inventors are already somewhat richer.

When an invention is found to be patentable, the patent department contacts the inventor and assists him in preparing the proper write-ups, filling out the correct forms, and gathering together working models and other material required in order to apply for a patent. If the inventor's own models and plans are not sufficient, models and plans that will serve the purpose are prepared by the tool design, toolmaking and engineering departments. After the models and other material have been correctly prepared, a patent is applied for in the employee's name and assigned to the company.

The patent remuneration plan in no way conflicts with the company's War Production Drive suggestion box procedure, but is an additional source of remuneration.

—*Steel* 8/30/43

Western Union's "Boys"

A YEAR ago Western Union began advertising for men over 50 "to come out of retirement." Many of its managers began to circularize the pension lists of cities, counties and corporations with the same plea. The intent was to replace the thousands of 16- to 20-year-olds it was losing to the armed forces and better-paying war industries.

Now Western Union believes it has uncovered a social phenomenon of lasting value. Men (and women) over 50, 60 and even 70 are as efficient messengers as youngsters are. Said W. U.'s Los Angeles personnel manager: "When the baseball season opened this year, nobody's grandmother died."

More than 1,500 middle-aged and older men and women have already come forward because of: (1) the inextinguishable desire of the human being to feel he is needed; (2) patriotism; (3) 30¢ an hour.

—*Time* 6/14/43

MUSIC IN INDUSTRY

By FORREST H. KIRKPATRICK

Bethany College

Will music in the factory actually increase output? If so, should it be played continuously or at intervals? What types of selections produce the best results? While no definitive answer to these questions is at present available, a considerable body of empirical evidence does exist, and that evidence is summarized in this article reprinted from the "Journal of Applied Psychology." Mr. Kirkpatrick reviews the most important studies which have been made on the subject, both here and in England, and outlines the conclusions that may be drawn from the findings.

MORE attention is currently being given to studies of recorded music as one of the psychological factors related to the efficiency and satisfaction of factory workers. Such factors, of course, are numerous and complex; hence investigations of this type may seem atomistic and feeble. The same is true of most studies of worker efficiency, for they usually examine only one specific factor—such as rest pauses, illumination, humidity, temperature, oxygen and distraction. The oft-quoted Hawthorne experiment, however, suggests that the more significant factors in worker efficiency may be far more subjective and elusive forces (19). Perhaps music is in this area.

It is reported that a long time ago there were many kinds of work which could not be done without music. Sea chanteys and work songs are a part of our national heritage. This seems like a far cry from recordings by Tommy Dorsey, electrically distributed throughout the modern factory, but there is good reason to believe that music in the plant tends to add to group morale and *esprit de corps,* to relax tensions and relieve boredom. Questions as to its measured effectiveness naturally come to the psychologist and personnel manager; hence studies in this field of applied psychology seem appropriate and challenging (14).

An examination of many of the reports on the use of music in industry shows that they are subjective and that they rest mainly on the belief that "worker boredom" is due to a consciousness of uniformity and repetition in work tasks. The assumption seems to be that anything that "will take the mind away" will reduce boredom. Activities most commonly reported to be reinforced by music are the motor processes of industrial operations in which auditory components are lacking or are at a minimum.

Perhaps the best-known study in this field was made in England by Wyatt and Langdon (22). They tested the effect of music upon performance of simple repetitive tasks, recording the output of 12 young workers at 15-minute intervals during the day. Five morning conditions were tested over a period of 95 days as follows: 30 days without music; then 15 days with 30 minutes of music, followed after a half-hour by 45 minutes of music; then 10 days with four 30-minute periods at half-hour intervals; and finally 25 days without music.

Wyatt and Langdon reported that average output increased, with the largest increase, 6 per cent, resulting from morning music and the smallest, 2.6 per cent, from one period each in morning and afternoon. But although the averages show consistent improvement from the music, individuals differed in their reaction to it. Moreover, because of the small numbers of workers in the experiment, the relative effectiveness of different types of music on output is hardly conclusive (the types were reported in the following order: one-steps, fox-trots, waltzes, light classics).

In a study of 350 other factory workers, Wyatt and Langdon found that employees feel that time drags most during the first two hours of each half of the workday, and that from 77 to 97 per cent of the workers studied believed that they *could* think of other things while they worked and that time passed more quickly when they *did* think of other things. Music's apparent favorable influence upon output may be due to its ability to add to the imagery in the consciousness of the worker, which may be dulled by the concentration upon a repetitive task long since mastered.

The effect of phonograph music upon the output of 88 female assemblers of radio tubes was studied by Humes (10) over a period of many weeks. His interest was focused upon the scrappage rate and its correlation with the presentation of slow music, fast music, mixed programs of slow and fast music and no music at all. Both slow and fast music showed less scrappage than the absence of music or than mixed programs. Employee morale was reported to be higher with music than without it. However, Humes exercises appropriate caution in interpreting his results, pointing out reversals of effect, the specificity of the effect, and also the possibility that non-musical factors might have influenced his results.

BURRIS-MEYERS' STUDY

At a meeting of the American Society of Mechanical Engineers in October, 1942, Professor Harold Burris-Meyers (2), of Stevens Institute of Technology, spoke on "Music in Industry." He reported research done by himself and Raymond N. Cardinell, of the same institution, in several factories. He cautiously comments: "The data we have are indicative.

They are not sufficient to form the basis of unassailable conclusions. . . ."

In connection with his talk, Professor Burris-Meyers showed several charts reporting his chief findings, viz.:

(1) Daily output of employees plotted against time showed an increase of 6.8 per cent where music was broadcast, as compared with production figures under precisely similar conditions where there was no work music provided. In over 75 per cent of all factories studied, the total production was found to be greater when music was broadcast than when it was not used.

(2) The total production per 100 man-hours for a group of approximately 100 employees of all degrees of experience, in two typical weeks, one before and one after a music installation was made, indicated an average production increase of 11.4 per cent.

(3) When production increases were set up in blocks showing the average production per 100 man-hours in one week, in only one week after music was installed was production lower than during the "control week" before the musical installation.

(4) In Chart 4, on which work production for operations requiring a high degree of manual dexterity and sense of timing was shown, there was an average increase of 4.97 per cent.

(5) In Chart 5 it was reported that absenteeism and early departures could be counteracted by use of music.

(6) The lines in Chart 6 showed the percentage of absences per week for four average weeks before, and four after music installations were made, and the blocks showed the four-week averages. From an average of 22.15 per cent without music there was a reduction to a 2.85 per cent average with music.

(7) In the case of properly planned music programs, as contrasted with an average program by any one of many self-styled experts, an increase in production of 6.8 per cent was determined.

Considerably less certain is the favorable effect of music on operations which require continued mental concentration. In a school experiment, Jensen (11) found that typing output was somewhat reduced by jazz and dirge music. Hevner (8) found that for certain compositions, major modality, fast tempo, high pitch, flowing rhythm, and simple harmony tend to express happiness best. Podolsky (16) has compiled data to show that music tends in general to increase pulse rate, respiration and metabolism, lower the threshold for sensory stimuli of different modes and reduce the regularity of respiration.

FURTHER BRITISH EXPERIENCE

Observations and opinions reported in various ways have tended to substantiate the thesis that music has several desirable influences in industry. Ramsey, Rawson, and others (17) report from a 1939 British survey that 74.5 per cent of employers using music believe that it increases work efficiency. Wynford Reynolds (18), in charge of a British program, has declared of industrial music: "It is a tonic like a cup of tea, something to cheer the mind. You will get increased output all right, but it will be

spread over the work-spell as a whole. You will not necessarily get it while the music is actually being played." According to the British Industrial Welfare Society (18), "On the whole the concensus . . . seems to be that music at work does much to relieve the monotony of repetitive work and produces a stimulus to increased output, and in the opinion of the Industrial Welfare Society there is no doubt that this development is not merely a wartime one, but that music at work will remain a definite feature of industry." Writing in a lay journal, Antrim (1) stated boldly:

> In plants up and down the land, I have watched workers coming off one shift or going on another with firmer step because of the music. I have seen faces light up when the music comes on in the middle of the day, have heard feet tap and lips sing. "I like the music," said a man on a noisy assembly line. "It's cheerful, and I have more pep when I get home."

In another journal, it was reported that production in British war plants has been stepped up between 12½ and 15 per cent for an hour after musical programs are introduced by the British Broadcasting Corporation. According to a report in *Marketing* for October 17, 1942:

> "One of the important minor jobs of the BBC is to keep the industrial front working cheerfully and at high speed to produce the required war equipment," reads the message. "The Corporation has three programs to achieve this end, all based on the view that the music must be familiar to the ordinary worker, given either at the beginning of the day's work or at the end of a particularly trying day.
>
> "The melody should be clear and well defined, able to ride over factory noises. Tone level or volume should be constant, and the tempo or the rhythm should create a bright and cheerful atmosphere. Music is best suited for workers who are employed on repetition or other monotonous work (especially female labor). The tone of an organ is unsuitable for amplification in factories, and so is 'hot' music or 'jazzing' of any melody. Loudspeakers should be small and well placed about the plant rather than large and only one or two to a department. Vocal items and speeches should be avoided."

WHAT WORKERS SAY

In a recent study Kerr (13) found that 96 per cent of a group of 162 defense trainees reported a favorable average belief in the psychological effects of music, 90 per cent expressing a belief in music's favorable effects on one working at a "wearisome, monotonous task," 77 per cent thinking music improves one's feelings "toward the people around you," 90 per cent that it helps "when you are tired," 87 per cent that it helps one's nerves, 56 per cent that it helps digestion, and 85 per cent declaring that it helps make one forget his worries. Factor analysis of the configuration of beliefs suggested the presence of an efficiency factor and a morale factor.

Kerr's (12) findings from a "Feelings About Music" study of 229 electrical workers were similar except that a physiological factor appeared. He also

found that the electrical workers prefer to work on a floor with music as opposed to a floor without music. In several groups, there was a slight tendency for older persons to be less favorable toward industrial music than younger persons and females were slightly more favorable than males. This type of study needs to be carried on in actual work situations—for different types of work and in different geographic areas.

TYPES OF MUSIC

There is much opinion but little experimental evidence as to the effects of different types of music. Reynolds (18) maintains that British experience indicates that slow waltzes, rhumbas, hot music, music that is too thickly scored, and vocals should be avoided. In a survey of British employers it was found that different types of broadcast programs received a rank order as follows: light orchestra without vocal, ballroom orchestra without vocal, brass band without vocal, swing orchestra or accordion without vocal, small novelty combination featuring xylophone, band with five vocals, light orchestra dance band without vocal, theater organ, rhythmic records of light classical music, dance-time records, military band, salon orchestra, dance band, band playing folk songs and dances of another nation. Thorpe (21) studied the type preferences of 475 college and high school students after they heard an orchestra play eight types and found that the top four fell into approximately this order: military march, semi-symphony, concert waltz, descriptive piece ("Whispering Flowers"); and that type preferences were not notably related to intelligence, college grades, or curriculum pursued.

Fay and Middleton (4) played four types of classical and two types of popular music over a sound system to 54 college students, and the students ranked the types from most to least pleasant in this order: light classical, old classical, romantic classical, swing, modern classical, and sweet; and all were rated as more pleasant than unpleasant. Freyman (18) reports that analysis of 190 replies received from 250 British workers indicates a demand for more modern popular tunes, music-hall songs, dance-time music and waltzes and less light classical, marches, and hot jazz. All the 190 considered music a pleasant background to their work. Humes (10) concluded from his study that quality of output is generally better under all fast music or all slow music than under programs arranged with pieces proceeding from most to least familiar. After experiencing several months of music, the British factory subjects gave all their votes to fox-trots and waltzes and none to one-steps, marches, or light classical. One-steps, however, appeared to have the most favorable effect on output (22).

An article in *Modern Industry* for September 15, 1942, on "Plant Broadcasting" states:

> One point on which considerable difference of opinion has been voiced seems now to be answered by experience. That's whether or not vocal selections are distracting. Although there's still some conflicting opinion, many users agree that numbers with vocal choruses belong in industrial music programs. The argument against them is that workers listen for words, thus don't give proper attention to their work. But provided the singing voice is not extreme in character, there doesn't seem to be any noticeable distracting effect on the workers—though British plants had to eliminate "Deep in the Heart of Texas" because workers stopped work to clap their hands in the chorus.

Diserens (3) made observations of dynamometer grips, with and without music, but this cannot be considered an experiment conducted under industrial conditions. Similar comment must be made of several other experiments (5, 6, 7, 15), but they have obvious implications for industry. It might be said that Seashore (20) stated something of an apologetic for music in industry when he wrote:

> Why then do we love music? Among other things it creates a physiological well-being in our organism; it is built from materials which are beautiful objects in themselves; it carries us through the realms of creative imagination, thought, actions, and feelings in limitless art forms; it is self-propelling through natural impulses, such as rhythm; it is the language of emotion, a generator of social fellowship; it takes us out of the humdrum of life and makes us live in play with the ideal. . . .

WHAT EXPERIMENTS DEMONSTRATE

It seems fair to conclude after a survey of experimental literature that no highly significant or conclusive research has been published concerning the effect of music on the output or health of workers in industry. It is a field of research that may be attractive and rewarding for the psychologist who is interested in industry and in social processes. It is possible to note some generalizations that come from experimental work and from intelligent observations made by management and labor. There is good reason to believe that the use of music in industry does relieve boredom and that it facilitates socializing. There is a general agreement that, properly controlled, music may increase happiness and contentment in work, improve output and lessen fatigue, and make the work-setting attractive to applicants.

Experience and experimental evidence also seem to indicate: (1) Music is most often appreciated by workers who perform repetitive manual tasks which require little mental concentration; (2) the music should be "turned on" only for comparatively short periods and that these should be determined after study of fatigue curves; (3) workers believe that music is desirable and helpful to their "feelings" during work hours; (4) music is a

hindrance to types of work which demand mental concentration; and (5) as a general rule, two or perhaps three periods of music of less than a half-hour's duration produce the most satisfactory results.

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SELECTING MUSIC FOR THE FACTORY*

In Great Britain, music has been widely accepted as a method of stepping up output and improving employee morale, and considerable study has been made of its effects on factory work. Hence the following article, abridged from a pamphlet issued by the British Broadcasting Corporation, embodies conclusions reached by the trial-and-error method and should prove helpful to American plant managers who are contemplating the introduction of musical programs.

BEFORE applying music to industrial working conditions, a careful study should be made of the subject, for much harm can result from ignorance of certain fundamental principles. The BBC's program policy is based on the opinion that "music while you work" should not be considered a means of increasing the work rate during the program period but a tonic which will so improve morale that output will be stepped up during the entire work spell.

The first principle to remember is that programs should contain as much variety as possible. Although it is true that dance music is the most popular type—and that it can most easily create an atmosphere of cheerfulness and gaiety—the too-frequent repetition of certain dance tunes may be irritating. Moreover, there is always a great demand for other types of music, such as Viennese waltzes, selections from light opera and musical comedy, marches and intermezzi.

In general, men and women workers have similar tastes. Young people ask for dance music; older folk like something more solid; but with young and old there is the same desire for "singable" melodies. Another point of interest is that workers engaged in heavy industry generally want music of the more robust type, while those in light industry—especially if engaged in repetitive work—show a preference for dance music.

PROGRAM ESSENTIALS

Essentials of any successful program, the Corporation has found, are the following:

Familiarity: Workers want tunes that they know, and the most popular and successful program is the one which enables them to "join in" by singing or humming. Unfamiliar items are never completely satisfactory, for workers feel impelled to stop and listen, and there is a consequent slackening of output.

Melody: Numbers without melody and those orchestrated or played in such a way that the melody is lost are unsuitable. The workers want to

* From *Music While You Work*, by Wynford Reynolds. Published by the British Broadcasting Corporation, 1942.

hear the "tune," and that tune has to "ride over" any machine noise. Music that becomes involved or rhapsodical is apt to sound blurred and meaningless when amplified for factory conditions.

Constant Tone Level: The tone level or volume should be constant, for disparity hardly noticeable in an ordinary room is exaggerated in a noisy factory. A phonograph record may vary to such an extent that some parts of it are inaudible while others are distressingly loud. And tone level should be taken into account not only when choosing records but also when arranging program items. If a small string combination is followed by the massed bands of the Guards, obviously the effect will be unfortunate.

Rhythm: Some industrial psychologists are of the opinion that a rhythm slightly in advance of the operators' normal working speed should be chosen, their contention being that such a rhythm will increase the work rate. This theory, however, is unsound. Factory processes are many and varied, and the working speeds of the operators vary accordingly; also, experiments have shown that the work rate of the naturally slow operator cannot be stepped up to that of the naturally fast one. Again, the maximum rate at which an operator can work is often governed by matters completely outside his control and may depend upon the machine and its particular cycle of operations. Thus rhythm or tempo should not be thought of in terms of "working speeds" but as a means of creating a spirit of cheerfulness and gaiety that can be of benefit to operators engaged on any and all processes.

Extremes of tempo should be avoided. Slow items may act as a soporific; fast items, as an irritant. The rhythm should not be too strongly accented—drum solos can sound like machine-gun fire when amplified and "hot" rhythms may give a confusion of sound. Any numbers that depend for their effect on strongly accented rhythm rather than melody should not be used.

UNSUITABLE PROGRAM MATERIAL

There are certain types of music which the program planner should avoid entirely. In this group the Corporation places:

Vocal Items: The Corporation has found that vocal items are undesirable because they become intrusive and tend to distract attention. For the same reason speeches broadcast during working hours invariably prove detrimental to output. It may be necessary to broadcast special messages or calls, but no unessential announcements should be delivered "cold."

Organ Music: Programs played by cinema or church organs are unsuitable for amplification in factories, for the notes of an organ have a

tendency to thicken and "boom," so accentuating the existing noise. Also, the dynamic range of the organ is so wide that there are often considerable variations in the tone level. These faults are particularly noticeable in noisy shops.

"Hot" Music: Any music that can be termed "hot," either rhythmically or melodically, is unsuitable. Deviations from the melody, such as is usual in stunt choruses by solo instruments, should be avoided. The melody should be clearly defined and the rhythm clear but unobtrusive. Lack of a melodic line, involved harmony, and complex rhythm all tend to create a confusion of sound under the test of factory amplification.

PERIODS OF MUSIC

It is important to recognize that the effect of a musical tonic diminishes if an overdose is given and that it is better to provide too little of it than too much. For a normal working day two and a half hours should be sufficient. The BBC's specialized "Music While You Work" programs are broadcast daily from 10:30 to 11 a.m., from 3 to 3:30 p.m., and from 10:30 to 11 p.m.; and the majority of factory managements use their own phonograph records for other periods.

Record programs have proved extremely beneficial when played as an antidote to nervous strain after air raids or at the beginning of the day's work when employees are depressed by bad news or weather conditions; or, again, toward the close of particularly tiring days—in fact, at any time when a tonic is necessary.

EFFECT ON WORKERS

The effect of music on different types of workers must also be considered:

Monotonous Labor: It has been found that those employed on monotonous and repetitive tasks benefit most from musical programs. This type of worker can reach an acute state of boredom, with a consequent relaxation of effort, and this is especially true in the case of female labor.

Skilled Labor: Workers employed on tasks requiring skill and mental concentration can derive considerable benefit from musical programs, but it is especially necessary to ensure that the program material, style of playing, and reproduction are satisfactory. Mental concentration can easily be disturbed, with resulting irritation, by unsuitable programs or bad reproduction.

Executive Staff: Generally speaking, music is unsatisfactory for the executive and office staff. The normal routine of an office cannot be conducted successfully against a background of music.

SOUND INSTALLATIONS

Installation and maintenance of sound equipment are of such importance that it is advisable to consult firms specializing in the work. Only the trained engineer can have the necessary understanding of factory noise conditions and their bearing on acoustic effects. Sound reproduction should be treated like lighting, power and heat—in other words, as a service which must be arranged to suit the actual work in progress. To mention one or two points: Loudspeakers must be so placed that there is an even distribution and diffusion of sound. For a large area a number of small speakers are usually preferable to one large one, since each small speaker can be so adjusted that the volume is suitable for its particular position. When the grouping of workers is changed or structural alterations are made, the factory management should consult its suppliers to discover whether it is desirable to modify in some way the original sound distribution arrangements. The factory's program supervisor should be responsible for reporting any alterations or faults that affect the proper balance and diffusion of sound, and these reports should be passed to the installation company's sound engineer. The right type of musical program can be heard in the noisiest of shops if the right types of speakers are properly placed and adjusted.

Le Tourneau's Model Testing Program

AS industry finds itself with fewer and fewer job applicants to choose between, it becomes increasingly necessary to employ pre-selection tests that can speedily separate the desirable from the undesirable applicants prior to the administration of ability tests that evaluate the specific abilities of those the company decides to hire. Since most concerns have had to lower their personnel standards because of current labor scarcity, pre-selection and mental ability tests have become particularly important today. A "pre-selection" test, devised by Le Tourneau, Inc., of Peoria, Ill., and Toccoa, Ga., has proved successful in determining immediately whether an applicant meets the minimum requirements of a low-class job. If the applicant scores better than the minimum grade on the pre-selection test, he is eligible for a low-class job. If he gets a grade above the low-class maximum, he is given a standard battery of tests to determine where he should be placed. Outlined below are the pre-selection and other tests employed by Le Tourneau, Inc.

Pre-Selection Test: Designed to select applicants qualified for low-class jobs and to eliminate all others, this test is currently proving invaluable in employee selection. If an applicant passes the test satisfactorily, he is asked to fill out an application blank and is given a formal interview.

The first page of the test includes questions of the sort used on formal application blanks and provides space for recording the applicant's score on the various abilities tested. The five sections of the test proper, none of which occupies more than half a test page, deal variously with number facility, perception, induction, reasoning, mechanical ability. Page four of the test paper

contains the company's regular interview form, to be used if the applicant completes the test satisfactorily.

Reading Test: Since many jobs do not require men with high or even average degrees of literacy, and since it has been discovered that men unable to write can read the more commonplace signs posted in the plant, Le Tourneau has devised a simple reading test. Consisting of a mimeographed sheet on which the interviewer may record general information concerning the applicant, the test comprises the following phrases, printed in one-half inch letters: *Danger, Stop, No Smoking, No Admittance, First Aid, Exit, 11,500 Volts, Hands Off, Be Careful.* If an applicant reads these words correctly, the interviewer completes the interview form on the back of the test and sends the applicant on to the medical examiner.

Mental Abilities Analysis: All applicants obtaining on the pre-selection test a grade above the maximum for low-class jobs are given a group of tests designed to indicate for what type of job each is best fitted. These include O'Rourke's Mechanical Aptitude Tests I and II, Guilford's Personality Inventory of Factors S, T, D, C and R, and the Mental Abilities Analysis, which has been adapted by Guy B. Arthur, Jr., former industrial relations manager of Le Tourneau, from tests devised by Dr. L. L. Thurstone, University of Chicago. Designed to determine the extent of the applicant's various abilities, the last-named test requires about 35 minutes, and each of its seven parts is graded separately.

The 17-page Mental Abilities Analysis includes sections testing perception, number facility, vocabulary, visualizing ability, memory, induction and reasoning. Comparison of the worker's primary abilities, as revealed by the test, with his success in a given trade has established that only a few abilities have any correlation with success, and these abilities, of course, vary from job to job. Consequently, to determine whether a worker possesses the ability for a particular job, a complete picture of the applicant's mental makeup (which the Analysis provides) is essential.

—*Business Ideas for Increasing Profits* (Prentice-Hall, Inc.) 7/1/43

U. S. Japs Wait Job Call

AT a time when labor shortages constitute one of the nation's greatest wartime problems, 40,000 capable and willing workers are kept out of essential jobs by a complex of prejudice, suspicion, and perhaps a measure of actual fear, which knowledge of the facts might do much to dispel. A determined effort is being made by the War Relocation Authority to overcome these obstacles and place 40,000 adult workers in useful employment.

These workers are part of a contingent of 107,000 Japanese concentrated in 10 relocation centers in seven western states and supported at government expense. Forty-five per cent of them were formerly farmers, 5 per cent were fishermen, and the remaining 50 per cent held various posts in manufacturing and mercantile industry. They were chemists, engineers, draftsmen, mechanics, truck drivers, bookkeepers, stenographers, retail clerks, cooks, hotel and laundry workers, domestic servants, and unskilled laborers. A little more than half the number are women.

Under present policies, indefinite leave will be granted any evacuee on the following conditions:

1. He has a place to go and a means of self-support.
2. Records of the FBI and other intelligence agencies, plus the applicant's behavior record in the relocation center, indicate that he would not endanger national security.
3. Evidence is obtained that his presence in the community where he proposes to go would not cause a public disturbance.
4. He agrees to keep the WRA informed of his address.

—*Commerce* 6/43

TRAINING WOMEN WORKERS

As Observed in Three Large War Production Plants

Planned induction training and progressive training in actual job requirements, supplemented where necessary by related instruction, make up the pattern followed by companies which have successfully trained women in operations habitually performed by men. This description of the manner in which three large war production plants have trained women in machine operations will be of help to plants facing similar training problems. The study was made by Mrs. Mary Curran, Training Specialist, Apprentice-Training Service, Bureau of Training, War Manpower Commission, on the basis of personal observations in these plants.

IN the critical labor supply areas, women are being trained to operate efficiently all types and sizes of machines and to perform the most exacting precision work. Training methods used effectively by three large producers of vital war products may be of interest to employers who are introducing women to operations for which men have habitually been employed. These plants have experienced a rapid expansion in the past six months. The need for additional workers and for replacements of skilled male employees reporting for duty with the armed forces has been met by training women. From 60 per cent to 80 per cent of their employees now are women.

TRAINING POLICY

All three companies have well-planned training programs. The training programs are directed by officials charged with full responsibility for training. Although organizational structure of the training departments varies in each plant, all are closely coordinated with the personnel offices, and the training programs are geared to the needs of the production departments. Supplemental instruction courses are designed to meet the needs of specific production shops; and the production departments, in turn, supply as instructors, both on the job and in the classroom, some of their most skilled workmen. In selecting the instructors, patience and other personal qualities, as well as skill in doing the job, are considered.

At Plant B, a Training Policy Board consists of the factory manager and his assistant, the employment manager, and the supervisor of training. Meetings of the Board provide for an exchange of information between departments. The training supervisor is apprised through these meetings of anticipated labor requirements and hiring schedules; and the production and personnel officials are given information on the minimum training time required to learn each job. Under the direction of the training supervisor,

there is a head instructor in charge of each of the three eight-hour shifts. The training department also designates a shop contact representative for each shift as its liaison officer with the production foremen. This unique feature of the training setup seems to bridge effectively the gap between departments. Training accomplishments have justified to Plant B officials the cost of maintaining their training department, which is more extensive than in most plants. Good feeling is also maintained by threshing out problems in "bull session" conferences with foremen and instructors. This close correlation between policy-making officials no doubt contributes to the success of the training program.

TRAINEE SELECTION

PERSONAL QUALIFICATIONS

Initial selection for employment is made on the basis of personal qualifications as revealed through information on the application form and a personal interview with a personnel officer. During the personal interview, an effort is made to ascertain home responsibilities and conditions which might affect the candidate's ability to be on the job every day. Concern over absenteeism led personnel officers in all three plants to stress this point. Mothers with young children are discouraged from accepting employment unless they prove there is someone at home to care for the children. Until adequate nursery and after-school care is provided, it is thought unwise to hire workers from this group. The problems caused by absenteeism due to household responsibilities, and by child delinquency, may outweigh the contribution made to the production effort. Child-care facilities in the community are inadequate at the present time.

Physical examinations are compulsory, and placement in various departments is based on such physical factors as eyesight, height or strength, and size of hands.

SOURCES OF TRAINEES

Women and girls are being hired directly from the home or school, many with no previous work experience. Very few of those hired since the fall of 1942 have had factory experience. Young girls from art classes are applying radium paint to instrument dials. Middle-aged women are found to be the best suited for lens-grinding operations which require constant and careful watching. In this area, labor shortages are such that applicants from all and any sources are considered by personnel officers in the three plants. Orders are placed with the U. S. Employment Service offices; students are referred from vocational training courses; and those

with no special training apply at the gates. Up to the present time, the number of female applicants has been adequate to meet hiring schedules.

PRE-EMPLOYMENT TRAINING

In selecting trainees, Plant B, which formerly hired only college graduates or honor graduates of vocational schools, now has no rigid educational requirements, but preference is given to candidates who have completed pre-employment training courses and to high school graduates who have had mechanical training or mathematics courses. For a few jobs, training in electrical engineering at the college level is required.

In Plant A, where applicants were formerly required to pass a formal examination, no formal examination is now given. The personnel director states that the educational requirement now is two years of high school or its equivalent, and in many recent appointments consideration had been given to "the equivalent."

All three plants give preference to persons who have had the advantage of vocational training courses, but educational and work experience requirements have been considerably relaxed as the trained labor supply in this critical area has become exhausted.

ORIENTATION TRAINING

Most persons are unwilling to take war production training at their own expense when they can obtain jobs and be paid while being trained. Consequently, individuals are hired as trainees and given pre-assignment or orientation training after being placed on the company payroll.

TRAINEE PLACEMENT

Placement in a department on a specific job is made upon completion of the pre-assignment or orientation training period—except in Plant C, where the trainee is immediately assigned to a production department.

In the three plants visited, there is sufficient variety of work opportunities to permit appropriate placement of most of the trainees.

PLANT A

At Plant A, a six-week pre-assignment course has been planned for all new employees. Women are selected upon hiring either as learners for the machine shop; as trainees for the lens-grinding department; or as draftsmen trainees. Upon employment, the draftsmen trainees are assigned to classes in one of the public vocational schools; those selected for the lens-grinding department are sent to another public school which has lens-grinding equip-

ment; one group of machine-shop learners is assigned to a public vocational school especially well equipped for machine-shop work; and the largest group of machine-shop learners is assigned to the night shift at the plant's own training school. All learners are paid by the company while attending these schools.

In the plant training school, all work is on production jobs, but emphasis is placed on the learning process and there is no production pressure. Trainees are at first given simple jig and fixture work. As they become oriented and develop elemental skills on the machine, they are instructed in the more complicated operations. During the six-week training period, supplementary classroom instruction which has practical application to the job is given in addition to shop practice. These courses comprise mathematics, blueprint reading, reading of micrometers, gages, and other measuring instruments, and safety instruction. Classroom instruction in the plant training school is given by public vocational school instructors and by the plant safety engineer. (This school is limited to apprentices during the day shift.)

Deficiency in mathematics is the greatest handicap to be overcome by the girls being trained for the machine shop, according to the foreman of the plant training school. He says that most of the girls have never learned to appreciate the usefulness of mathematics. During their training period, those with a talent for mathematics and a mechanical aptitude are spotted for assignment to the toolrooms, according to their physical qualities and temperamental characteristics as observed during the training period. Others are assigned to assembly work, simple testing, drill presses, etc. Out of the group of trainees to date, it has been possible to select girls who can do good work on lathes and milling machines and also follow simple blueprints. Some will learn to do their own setup work.

Upon completion of the training course or upon demand for trainees by a production department, the trainees attending public vocational school classes are assigned to a particular section or department on the basis of the school record, observation of aptitudes by the instructor, and physical fitness for the work. Between June, 1942, and January, 1943, women trainees have been placed in every department except the crating department, where the work requires lifting of heavy packing boxes.

A strong determining factor in the length of the pre-assignment training period in this plant at the present time is the need of the production departments for workers. Where the demand for workers cannot be met by trainees, persons are placed directly in a production department and given all their instruction on the job or are taken from the schools before completing the training.

During the last seven months of 1942, 87 per cent of the learners hired by the plant were female.

PLANT B

All trainees hired are given one week of pre-production training before assignment to a work station in the plant. At the time of hiring, a learner assignment form is sent by the employment department to the training department. Suggested courses for the trainees are blueprint reading, shop mathematics, measurement, fits and finishes, shop practice, and elementary instrument assembly. Detailed manuals compiled by the training department are used as texts, and a technical lending library is maintained. The latter is widely used by the employees. The elementary course in instrument assembly is an over-all study of the principles of operation of flight instruments and their relationship to "flight security." The importance of the industry to the war effort and the necessity for quality workmanship are pointed out, and each tool and operation is carefully explained and illustrated. Thus trainees are made conscious of the relationship of the part to the whole and of their particular contribution to the war production program. Blueprints and analysis sheets and their uses are explained. Such terms as allowances, tolerances, and dynamic balance are fully and simply explained.

Trainees are assigned to classes by the instructor in charge. Instructors are selected by the training director from the best-qualified workmen in the production departments. They are trained in instruction methods. The trainees spend one hour a day in each of the classes to which they are assigned until completion of the course or assignment to a department. In addition, they are given talks by the safety engineer, make trips through the entire plant, and receive practical instruction on the various machine tools and inspection procedures. The training supervisor expresses the opinion that this orientation training is of especial importance for women trainees, since their acquaintanceship with production shops is negligible.

PLANT C

After trainees are selected from applicants referred by the U. S. Employment Service, from vocational schools, or elsewhere, no training is given in the plant prior to a job assignment. The personnel officer who directs the training program assigns a trainee immediately to a work station in a production department. Starting jobs are usually assembly work or drill press operations. The job instructor is expected to assist the new employee to become oriented in the shop.

TRAINING ON THE JOB

PLANT A

The Optical Section of the Instrument Department has absorbed the largest number of female trainees hired in the past seven months. Women have been found especially well fitted for work in this department, as it is light work requiring patience, a sense of touch, and precision. Assignment to a particular work station is made on the basis of the aptitude shown at the school and on the recommendation of the instructor. Under present conditions, the assignment is, of course, also affected by the needs of the production departments. Women perform all operations from rough grinding to centering, inspection, and some of the final stages of polishing. For the finer grinding operations, middle-aged women are preferred to young girls, since this process requires steady and careful watching. The final prism inspection and hand inspection are still done by males; however, it is expected that, when they have developed the "feel" of the work and have been trained to a higher degree of precision, some of the women will be able to perform these jobs if necessary.

In the Lathe Shop of the Instrument Department, the foreman is enthusiastic about the performance of the girls under him. There are 55 girls on the night shift. Since the work in this department is heavy and difficult to set up, experienced men are employed on the day shift to set up the work and get it under way. The shift schedule provides for an overlap of about 15 minutes so that the men can explain the setup to the girls and show them the job they are to do. Of this group of 55 trainees, none of whom has had more than six months' experience, 14 have been recommended for promotion from trainees to machine operators. The foreman intends to try a few of these girl operators on setup work. He remarks that the girls are especially good on drills, compared with the men, since they have a better sense of touch on the tapping. On-the-job training continues in the production department until the "trainee" is promoted to "operator."

A first impression of the shell-casing shop is that it is a noisy and less pleasant place to work in than the machine shops. There is a continual procession of bins of shell casing in various stages of process, and overhead there are conveyor belts, and shafts down which the casings are sent. Toward the back of the shop are large hot bath solutions for annealing, and enormous hydraulic presses. Men handle the casings from the conveyor belt into the hot solution, through the cooling process, and back to the bins for further processing. Until a few months ago, no women were employed on the machines in this department. Women are now operating

the hydraulic presses and handling the casings through all the processes from the first draw to the cutting, shaping, beveling and testing. A first draw of the 90-mm. shell weighs about five pounds. To lift these from the bin and place them in the press continuously for eight hours daily requires considerable physical stamina. The operation of the press calls for only short training, as it merely involves pressing buttons and levers.

PLANT B

Requests for learners originate with the department foreman and the production superintendent, and then are transmitted to the training department. Although the trainees remain in pre-assignment training until a request is received by the training department from a production department, the minimum of one week is all most of the trainees spend in pre-assignment classes under present conditions. From the trainees who have completed the week of orientation training, the instructor recommends those whom he considers best qualified for the positions which are open. Training on the job continues to be directed by the training department in cooperation with the production department foreman. Close coordination has been achieved between the training department and the production departments through a series of notification forms and through the use of shop contact representatives from the training department. The training department maintains records of the courses completed and grades received by each worker in the plant, and a record of the rate increases of each trainee.

After the trainee has been assigned to a department, a shop contact representative of the training department discusses with the foreman the supplementary courses the trainee should take in order to acquire the knowledge necessary to qualify for the job classification for which she is training. On the basis of this information, a schedule is compiled by the training department, and each foreman is notified which classes the learners are to attend. These might include blueprint reading, measuring-instrument reading, mathematics, or other subjects directly related to the job. A notification of the classes to be attended, signed by the foreman, is given the trainee. On this form appears the statement: "As a learner-operator, it is to your advantage to be prompt and not miss any session." Time cards are punched by the trainees and signed by the foreman for time spent in class. The class schedule is submitted to the floor superintendents in order to give them an opportunity to determine how many trainees may be spared from a department at one time without interfering with production. Only permission from floor superintendents is accepted as an excuse for failure to attend classes. The shop contact representative sends the foreman a form notice

listing any absentees from class and notifies the training department when there is a change of shift or department.

Most of the work at Plant B involves small parts, and the women have been found especially adept at handling these. On the instrument drill press they are doing better work than the men. The training supervisor states that the amount of scrap is less than one would expect, and he attributes this to the careful training the learners are receiving.

One girl has been assigned to an Excello Grinder, where a small part must be inserted while a very sharp wheel revolves continuously. One moment of carelessness here in not inserting the part in exactly the right way might mean the loss of a finger. An operator-instructor was assigned to teach this operation. The trainee observed the instructor performing the operation for the first few hours. She was then shown exactly how the piece was inserted, repeated the motions after the instructor, and then was allowed to do it under the watchful eye of the instructor. After correction and repetition of the observation and trial process, the operation was mastered. Careful training prevented an accident during the learning period.

Girls are learning to operate most of the machines. On the Excello Boring Machine, they cut to .0002. They are adept in the assembly of the small parts and wiring required for the instruments on airplane panel boards. All the employees in the coil-winding department are women. To relieve the monotony of this type of work, incidentally, recorded music is provided through amplifiers. Several women are working in a production shop where there are batteries of large automatic machines, and one of these women is operating a large Gleason.

Girls are now operating Brown and Sharpe machines, doing setup on specific production items, handling taps, and sharpening the tools. As might be expected, they are not so fast at this work as the boy graduates from vocational schools, customarily hired for these jobs, but they are doing well.

In the Inspection Department, a girl was observed examining very small jewels through a microscope. She explained that defects "popped up" at her just like errors in grammar. This work requires a calm temperament and excellent eyesight; and, even with these prerequisites, the worker can inspect only a few hours at a time. Employees assigned to this job are given other work for relief. In this plant, girls have been found especially well adapted to the assembly of small instrument parts, painting radium dials, and careful inspection work.

A device employed to make the work more interesting was the use of showcases in the various departments with instruments mounted and open on one side so that the inside parts could be seen. Workers are encouraged

to find the particular part on which they are working and observe its relationship to the whole. This enhances the interest of each worker in his own small part in supplying our armed forces. These "cut-away" products are also used as illustrations in classroom instruction.

PLANT C

Women have customarily comprised 50 per cent of the personnel of this plant, but a 300 per cent expansion during the past nine months has forced the company to train women in operations previously performed exclusively by men. Starting jobs are usually assembly work or work on the hand drill presses. A job instructor teaches the trainee the specific operations required at the work station. Those displaying machine aptitude are advanced to the hand screw machines and then to the automatic screw machines. Thirty-three girls are now doing good work as automatic screw machine operators.

In advancing workers to more responsible positions, first consideration is given to those employees who have demonstrated their interest in advancement by taking the voluntary supplemental instruction courses offered outside of working hours in conjunction with a nearby university. Some of these courses are given by instructors from the plant and are designed to meet the plant's needs for better-trained workers. Inspection courses are offered both to employees interested in advancing to inspection work and to some new employees hired especially for this kind of work.

SPECIAL PROBLEMS

FOREMAN RELUCTANCE TO ACCEPT WOMEN IN PRODUCTION DEPARTMENTS

In Plant A, the foreman of the Milling Section of the Instrument Department was at first strongly opposed to having any women in his shop and only a short time ago consented to try one out. One of the best girl trainees from the plant training school from the standpoint of ability and temperament was sent to him, and he grudgingly admitted, after trial, that she proved a fine worker. Although he still has personal reservations about use of women in his shop, he says the six he now has are doing all right.

The foreman of the Automatic Screw Machine Department in Plant C was opposed to having girls in his department. He consented to try a few of the best operators on the hand screw machines. Their success is evidenced by the fact that 33 girls are now employed in the Automatic Screw Machine Department. One of these girls is being taught setup.

Loss of indentured toolroom apprentices to the military services led officials at Plant C to consider girl toolmaker apprentices. The foreman of the toolroom, when first approached on the subject, threatened to quit

if a woman crossed the threshold of the tool shop. However, he has now consented to experiment with one girl who has been with the company for eight years. She will be placed under indenture and be given credit for applicable work experience. The apprenticeship program is registered with the State Apprenticeship Council.

WOMEN AS SUPERVISORS AND FOREMEN

To assist the foremen at Plant C and to replace those lost to the services and other war production plants, one foreman is being put in charge of from four to six assembly lines and a woman supervisor will be in charge of each line, working under him. Supervisors are selected for their judgment and general ability to get along with the girls. This arrangement is proving satisfactory. In the opinion of the personnel director of this plant, women can be trained to be effective foremen and will show less partiality to individual girls than the male foremen. Twenty-two girls are taking the plant's supervisory course, and 12 are enrolled in a four-week foreman training course. Officials at the other two plants do not believe that women make good foremen. Their objections, based purely on opinion and not on experience, are that women foremen would be inclined to pay too much attention to small details and to be dictatorial. It was admitted that men have had the advantage of long experience and a knowledge of shop traditions. No training for supervisory positions is being offered women in these plants at present.

Women counselors are employed in the personnel departments. Their duties are to advise the girls on their personal problems.

SHIFTS AND WORKING HOURS

At Plant B, all production departments operate on three shifts. The women, to the surprise of the personnel department, prefer the second and third shifts. No analysis of the reason has been made. A contributing factor may be that these shifts permit them to do their shopping, household and personal duties during the daytime. All employees are on a 48-hour, six-day week.

At Plant A, the training school is operated on two shifts, with the female machine-shop learners all on the night shift. During the day shift the school is used for the training of male apprentices in their first and second years of apprenticeship. The girls and the boys were not segregated at first, but it has been found that since these groups are composed, for the most part, of young boys and girls, there are fewer problems and less "horseplay" when they are segregated. Women are also assigned to the night shift in the Lathe Shop of the Instrument Department so that the experienced

men can set up the jobs. In other departments, men and women work both day and night shifts. Plant A officials have found that most of the women prefer to work on the day shift.

Plant C works on two shifts, with considerably fewer employees on the night shift. The girls rotate on the night shift, since a decided preference exists for day-shift work.

ABSENTEEISM AND TURNOVER

One of the major problems in all three plants is absenteeism, which has risen noticeably with plant expansion and the hiring of young and "green" workers. Insofar as it applies to women, this is attributed to various causes, including home responsibilities, shopping difficulties, and the fact that many of the women employed have not established steady work habits.

The absences complained of by plant officials are those due to causes other than sickness. Permissive vacations have been suspended for the duration. Consequently, employees do not request leave but simply stay out when they feel the necessity. Various means are being employed to overcome this. At Plant C, the personnel department is experimenting with a regulation requiring the worker to report to the personnel office to explain all non-permissive or unexcused absences before reporting to the foreman for work. One of the foremen has intimated that the only appeal that seems to work is the monetary incentive, and he has suggested that it might be practical to offer a bonus for a perfect attendance record over a specified period. A thorough understanding of the job requirements on the part of the worker and of the home conditions of the worker by the personnel department may be helpful in curtailing preventable absences. Incidentally, complaints have been bitter against those women who have left to join their husbands at an army post, after the company had gone to the expense of training them.

PLANT FACILITIES AND ADJUSTMENTS

Plant B has a well-equipped health room, with a doctor and nurses in attendance. All employees have recently been vaccinated, at company expense, in conformance with a recent state ruling. A group of visiting nurses, attached to the plant health department, visit sick employees in their homes, servicing both them and their families. Adequate and pleasant locker room and rest room facilities have been provided the women in these plants.

Plant A contains a separate cafeteria building, convenient to workers in

most of the departments; in addition to hot foods, a canteen and sandwich counter are provided. The cafeteria at Plant B is patronized by both workers and officials. Here hot foods and sandwiches are served in a large, pleasant room, and recorded music helps to create a relaxing atmosphere.

SAFETY AND CLOTHING

Safety instruction is given strong and continual emphasis throughout the training period in all these plants. By insisting on safety practices, serious accidents have been avoided. Careful induction training has reduced the number of cut fingers.

One plant reception room displays a sign stating that job candidates need not apply unless they are willing to be careful: "We do not want careless employees." All plants require that the girls working on machines wear hair nets. They have tried to induce the girls to wear uniform slacks by having the lead girls and supervisors wear them, but so far this has not been noticeably successful.

Plant B furnishes smocks for non-machine work and coveralls to employees doing machine work. Wearing of these is compulsory.

In an air-conditioned room at Plant B, art students apply radium paint to instrument dials. Rigid rulings forbid the use of make-up and nail polish, and every precaution is taken by the company to prevent radium poisoning. All employees of the department are given physical examinations periodically, and several times daily they are examined by women supervisors in a dark booth for any particles that might cling to their clothes.

At Plant A, all rings must be removed; and in departments which contain moving machines, safety clothing must be worn. This consists of slacks; a blouse or sweater (not loose), with short sleeves; hair net; and safety shoes.

A safety clothing store has recently been installed in this plant. Attractively designed slacks, blouses, smocks, and safety shoes are offered to employees at a reduced price on a strictly non-profit basis. The store is open at hours convenient to workers on all shifts.

CONCLUSION

The personnel and training directors are emphatic in the opinion that orientation training is of importance for women trainees, since their acquaintanceship with production shops is negligible. They recommend that this be as complete as demands from the departments for replacements will permit. Anticipation of labor requirements will assist in plan-

ning hiring schedules so that each trainee will get the benefit of the full orientation course. To make effective workers of the women, the orientation training should be followed up with on-the-job training in the production departments and pertinent supplementary instruction.

TALKING YOUR RATINGS

By T. O. ARMSTRONG
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MERIT rating plans are of little value unless they are designed to increase the efficiency of those who are rated. Experience indicates that this purpose is best achieved when the raters discuss their ratings with employees and show them how they may be improved.

For one reason or another, however, personnel men often hesitate to discuss ratings with workers. Not infrequently this hesitancy is due to a belief that praise or constructive criticism of an employee results in "coddling" or spoiling him. Typical is the comment: "Employees are expected to do a good job; I don't believe in nursing them." Such an attitude stems from failure to realize that most workers like to know "how they stand" with the boss, want to be appreciated, like to feel they are part of the enterprise, and believe they have a right to expect praise for performance of which they can be proud.

Many supervisors and raters encounter difficulty when they attempt to talk over ratings with employees. Some supervisors declare they would rather dispense with a rating plan altogether than cope with the arguments that result when they discuss the unfavorable factors in an individual's rating. In other cases raters find it difficult to "get their story across," lack ability to "talk the ratings," are uncertain of the factors on which they rate the employees low—or merely prefer to have someone else "handle the tough ones." Obviously, then, supervisors and raters should be trained in the proper method of discussing ratings with workers.

The following general principles governing the administration of reprimands and criticism might well be considered by raters:[1]

1. Criticism and reprimand should be based on *facts* and should avoid personalities at all times.

[1] Moore, Herbert. *Psychology for Business and Industry*, McGraw-Hill Book Company, Inc., New York, 1942.

Employee Progress Form

EMPLOYEE..... OCCUPATION..... DEPT..... NO.....

(Place a check mark in the lower left corner of each box when the answer is affirmative)

Quality of Work	Is he consistently doing an excellent job?	Is the quality of his work good most of the time?	Work barely passes. Has to be criticized frequently.	Does he make mistakes often?
Quantity of Work	Does he give his best effort at all times?	Does he give his best effort most of the time?	Does he do only so much, nothing more?	Is he consistently falling down in his work?
Knowledge of Work	Does he have a thorough knowledge of the type of work he is doing?	Has he mastered most of the details involved?	Does he know his job fairly well but need help?	Does he need considerable supervision and help?
Dependability	Can you depend upon him to do a job completely?	Does he require checking some of the time?	Does he need checking often?	Is he one whom you cannot depend upon at all?

Other comments you may wish to make—e.g., on attendance record, willingness to learn, capacity for growth, etc.

PLAN YOUR TALK TO MAN

Talk to Him About These First	Then Talk to Him About These
Favorable Remarks	*Unfavorable Remarks*

Have you talked to man?..... When?.....

Signed.....

2. Public criticism is rarely justified. It usually results in the development of an antagonistic attitude.

3. Private reprimands should be *prefaced* with a statement of some of the *more favorable factors,* such as attendance, quality of work, and production records. Undesirable qualities are more easily corrected when contrasted with desirable characteristics in the person being reprimanded.

One method of training raters to discuss their ratings effectively with workers is illustrated in the rating plan employed by the East Springfield (Mass.) works of the Westinghouse Electric & Manufacturing Company. This plan stresses periodic consultation between the raters and the employees with regard to the latter's progress on the job. Mandatory ratings of each employee are made once a year—though more frequent ratings are urged and, indeed, many foremen have found it beneficial to rate their subordinates three or four times yearly.

An "Employee Progress Form" (illustrated on preceding page) provides a complete record of each worker's progress. The "talk plan" outlined at the bottom of the sheet includes space for practice before discussing the ratings, and assists the supervisor to set his own thoughts in order and to arrange the sequence of his talk to the workman.[2] The rating interview starts off on the right foot, since criticism is prefaced by comment on the more favorable factors in the man's performance. In short, the aim of the plan is to encourage improved job performance instead of to "bawl out" the worker (which is generally the result when the talk is not planned). When the employee's performance improves, he may be re-rated and given a new interview to spur him to further improvement.

The following is a good guide for raters to follow in planning their talks with employees:

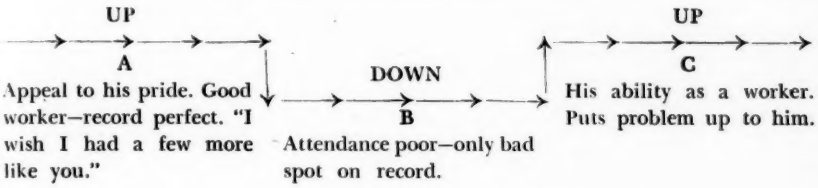
Step I	Step II	Step III
Start out by stressing the good points of your rating	Follow with what's wrong with the record	Repeat and conclude with other good points in the man's record
Talk	This	Way
Good Worker	Attendance Poor	Knows His Job

Example of planned talk: "John, you are a good worker; indeed, your record on that score is perfect. I wish I had a few more like you. Is there anything I

[2] The idea originated from a course in "Principles and Methods of Supervision" conducted by the Sales Analysis Institute.

can do to help you straighten out your attendance? That is the only spot in your record which prevents me from turning in a good report about you. Knowing you as I do, and knowing the ability that you have, I can't understand this phase of your experience here. What's the story, John?"

MENTAL REACTION OF LISTENER


UP
A
Appeal to his pride. Good worker—record perfect. "I wish I had a few more like you."
DOWN
B
Attendance poor—only bad spot on record.
UP
C
His ability as a worker. Puts problem up to him.

Cold Cure

A NEW common cold remedy, described as having cut war plant absenteeism by more than half in its first trials, was reported to the American Chemical Society recently. The remedy, a new sulfanilamide drug, is called vasosulfa. It is a nasal spray. Dr. Henry R. Hamilton, of the Lockheed Aircraft Company, California, who reported it, said that when a cold starts, the spray frequently stops it. In Lockheed's chemical division, where a thorough check of the drug's effectiveness was possible, only five man-days were lost as a result of common colds during a period when the average loss expectation was 126 man-days.

—*Industrial Medicine* 7/43

▶ BORROWING AN IDEA from the schoolroom, one New York factory is issuing monthly report cards to its workers. The cards compare employees' production and absentee rates with those of the previous month, also grade them on personal characteristics, such as initiative, steadiness, etc. Suggestions for increasing wages as well as output are included.

—*Forbes* 8/1/43

Letters To The Editor

Woman's Place In War Industry

MARY B. GILSON
War Manpower Commission
Boston, Mass.

It would be superfluous to repeat evidence of the urgent need for additional women in many war plants and shipyards. But few persons not engaged in production realize the even greater importance of more effective utilization of men and women already employed. As the need for acceleration of the war program becomes more pressing, and as more and more labor markets become critically "tight," we must not only divert an increasing number of women from non-essential work into war industries and turn housewives without small children from their "business as usual" attitude, but we must pay increased attention to labor turnover and absenteeism and the folly of exhaustingly long hours and poor working conditions. Incentive which originates in recognition of merit, regardless of race, nationality, religion or sex, is particularly important at a time when morale is all-essential on the home front.

SOME PROPOSALS

It is because of the rapidly expanding use of women that we must consider the most effective ways of promoting their usefulness in a field to which many are unaccustomed. To achieve a satisfactory level of efficiency, a healthy intra-plant attitude must exist toward the influx of women workers. Let us examine the following proposals:

First, that top management assume the responsibility for development of a dignified attitude. Unless the general manager of a plant acknowledges this responsibility and has the art of inspiring his supervisory force with the importance of carrying out this policy, the disruptingly high turnover of women will continue. This is not to imply that all turnover is due to the attitude of men toward women. But in too many cases decent women earnestly desirous of doing their part quit their jobs because they are disgusted with the atmosphere in which they work. They do not enjoy being whistled at, being pawed by a man whose job is instructing them, being treated to ribald jokes.

Second, that women be treated as persons and not constantly reminded that they are women; that they, as well as men, be permitted to "work up," regardless of education and background, and reap the reward of upgrading solely as a result of qualification and merit.

PERSONNEL COUNSELING

Third, that we avoid reverting to the outmoded concept of "welfare work" so prevalent in relation to women's work in the nineteenth and early twentieth centuries. Anyone cognizant of the trend from "welfare work" toward scientific management and functionalized employment procedures will acknowledge the fundamental common sense underlying this movement. Until the depression blocked its progress, women personnel workers in progressive plants were integrated into the organization as a whole. Today, in many war plants, a woman is employed to look after women's interests only.* She is not given an integral position even in the personnel department. She has an inadequate office, stuck off in some out-of-the-way corner. No private interviewing office is provided for her. If she has a staff, its members have as peripheral connections

* Since writing this, my attention has been directed to the fact that the Board of Higher Education of New York City has recently taken a significant step forward. The positions of Dean of Men and Dean of Women have been abolished, and the man and woman formerly holding these positions will be known as Deans of Students, each of them dealing both with male and female undergraduates. It was felt that, inasmuch as both were consulted by men and women, it would be more efficient to do away with sex distinctions. Here is food for thought. Any experienced personnel worker in industry knows the same step could be taken advantageously in an industrial establishment. —M. B. G.

▶ NOTE: *Letters and comments by readers of* PERSONNEL *are welcomed by the editors. Names of correspondents or their company affiliations will be withheld on request.*

with the firm as she has. They are called "counselors" or "advisers," both of which terms savor of condescension. In a few establishments, this condescension is somewhat tempered by having "counselors" for men as well as for women. Anyone whose work involves human beings knows that personal problems are faced by men as well as by women. But this is not the main issue. It is of the essence of good management that members of the supervisory force should establish such sound relations with their workers that personal problems naturally gravitate in their direction. Of course, there are always exceptions. For example, new workers may not yet have acquired confidence in their immediate supervisors. Moreover, in these days of rapid expansion, supervisors are frequently untrained in any but technical matters or are of unsatisfactory caliber. In such cases they do not command much respect. To anyone unacquainted with this fact, I commend Josephine Von Miklos' *I Took a War Job*. It is hard to conceive of her immediate supervisor in her shipyard job, who tried to play the lover as well as the boss, inspiring the confidence of any self-respecting worker.

It is advisable, whether or not supervisors have commendable characters and ability, to have both men and women in a personnel department, for it is this department which is ultimately responsible for getting things done. In both union and non-union plants, management needs a competent personnel department. Too often the personnel manager is known as the "office boy" (or the "office girl") either because he is not characterful and competent or, if he is, top management has not clearly enunciated its jointly-agreed-upon policies and then let the organization know that it is the function of the personnel department to carry them out with the cooperation of supervisors and workers. We are all familiar with the "sink or swim" type of manager who dumps a man into a personnel department and tells him he must "sell himself" to the superintendents and foremen. Under such circumstances, sinking is more common than swimming.

"FREE-WHEELING AMBASSADORS"

But whether the personnel department is given dignified and responsible status in an organization or not, whether supervisors are or are not competent, it is not conducive to sound coordination to have "counseling services" in a plant if the relationship of the counselors to the organization is merely peripheral. One large war concern announces that its counselors "have no concern with production." The winning of the war depends on production, and every individual in a war plant must be deeply concerned with production. If I were a foreman or superintendent, I should have little patience with these "free-wheeling ambassadors" proffering advice to my employees without holding down any functional position. Take, for example, the question of securing leave. In the first place, there should be a specific policy understood and subscribed to by the workers. In the second place, whether a worker's request for an excused absence is placed with a foreman, a shop steward or an assistant supervisor, it should be cleared through the personnel department, in whose hands lies the responsibility for coordinating and carrying out policies subscribed to by management and workers.

Progressive firms that take their responsibilities seriously and recognize the importance of clear-cut policies often compile a standard practice manual, which is a Book of Common Law covering the day-to-day problems arising in a plant. Such a book of procedure must always be alterable in accordance with the alteration of majority opinion. In the case of a union shop, no contract can be sufficiently detailed to cover the innumerable questions which arise in connection with the day's work. And no plant is free from turmoil which permits these questions to build up accumulated irritation by virtue of divergent decisions rendered by various officials and supervisors.

Lastly, let us cease considering women as temporary workers answering an S.O.S. in time of war. If we are really serious about fighting for democracy, let us recognize the wide diversity of aptitudes among women and guarantee them the opportunity to continue their work in what has hitherto been narrowly regarded as "men's fields" if they choose to do so. Let us scorn the undemocratic concept that women should not work unless forced to by financial necessity. Work should be considered an opportunity for self-development and self-discipline, and women must have this opportunity both during and after the war. Women used to be told there was not "room" for them at the polls; benighted and reactionary persons now say there will not be "room" for them in industry after the war. Great postwar plans are under way now. Let us hope they include plans to

provide work for all citizens of our commonwealth, regardless of sex and income, who are able and willing to work. And if women are to have the right of choice in exercising their widely diverse aptitudes after the war, let us now train them to take dignified and integral roles as both workers and supervisors in plants and shipyards turning out what it takes to win the war. Let us not invent "counseling" and "advising" as makeshifts for the real thing. Let us turn our attention to training women for supervisory positions whenever they qualify for them.

★

CMP for Manpower?

M. H. BROFFMAN
Brussell Sewing Machine Co., Inc.
New York, N. Y.

At a recent meeting of the State Advisory Committee on Education for War Industries, representatives of large national concerns described elaborate plans of training and industrial aptitude testing. Involving as they do thousands of workers, such plans do little to solve the manpower problem faced by smaller war plants such as ours. We lack the physical facilities and the finances to engage in such in-service training programs but must depend almost wholly on public agencies and governmental training schemes to secure necessary personnel. The seriousness of our problem (which is a problem faced by hundreds of other small war plants) prompts me to offer the following suggestion:

War plants must submit manning tables and replacement schedules to Selective Service boards. On these lists each person is classified as to the type of work he performs and when he will be called to the armed forces. Why cannot these lists be analyzed by the directors of vocational training programs or by boards of education in each locality as a basis for planning specifically for the needs of local war plants?

Such a procedure would have these results:

(1) It would be possible to determine, for example, how many engine lathe operators will be required or how many grinding machine operators will be needed in specific areas.

(2) Not only would it be possible to train persons in the skills most urgently needed; skilled workers could be directed to specific war plants on specific dates, since the replacement schedules indicate needs precisely.

(3) Attendance at training classes will be maintained if definite requirements are known.

(4) War plants will achieve smoother turnover, with less disruptions and slowdowns if they know that their needs are being anticipated and met. Furthermore, job orientation of trainees may be begun by introducing them to plant conditions even before training is concluded.

(5) No time will be wasted training operators in skills not required in the area.

TRAINEES AT LARGE

The above is merely a brief outline of a possible solution to the problem. At present, newly trained workers scour plants for jobs. The larger companies skim the cream, while small plants (whose products may be essential on the assembly lines of larger plants) select personnel from the residue. Further, trainees walk the streets for jobs because:

(1) They do not know of small plants which require their services.

(2) When referred to employers by the USES, their training may be different from that required.

Perhaps a plan could be evolved whereby a plant could draw up a complete bill of materials in terms of labor needed to fulfil war production requirements. Training schools and programs in the area could be guided accordingly, training their students for the specific jobs listed on the schedules.

When this suggestion was presented to the Advisory Committee, disagreement was voiced on the following grounds:

(1) The Vocational Training Program is not an employment agency and hence cannot refer trainees to jobs.

(2) Industry should not depend on the government to be its personnel manager; all it should expect is that trained workers be placed on the market and it be permitted to recruit them as best it can.

I submit that the above are hardly adequate answers:

(1) If the Vocational Training Program is not equipped to handle job openings, the USES should do so for it. If the idea is worth while, a placement agency should be provided.

(2) It is not a matter of desiring the government to do one's work. But it is precisely this "every plant for itself" idea that led to the present situation.

In brief, I suggest a "Controlled Materials Plan" for manpower. Just as the government had to resort to the CMP to allocate critical raw materials, so (with due allowance for the human factor) could it control the trained labor supply. A CMP for manpower would go a long way to solving our problem.

Aid in Work Simplification Training

WORK simplification training in peacetime usually consisted of several meetings a week at North American Aviation, Inc. Now, seven conferences are operating continuously for the supervisory group and two for new employees.

The magnitude of the training program has made it necessary to schedule work simplification conferences for one of several conference rooms alternately. The conference leaders, in order to have all necessary material on hand for demonstrations of work simplification principles, designed a cart for storage and transportation of the equipment.

This equipment includes a 16-mm. projector, rolls of films, layout planning board with models, demonstration charts, supply bins of several varieties with an adjustable work area arrangement, supplementary material, and a supply of flow process charts.

A special parking space in the educational section of the plant is provided for the cart, to which space it is returned following each conference.

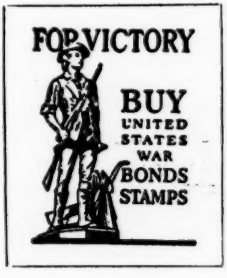
—*Factory Management and Maintenance* 5/43

Incentive to Good Gardening

EMPLOYEES of Servel, Inc., who belong to the Servel Victory Garden Club are competing for $150 in cash prizes offered for the best victory gardens raised this year. The club is sponsored by the Servel Employees' Association and the company in cooperation with the OCD. Gardens will be judged on the basis of variety of crops, choice of varieties, state of cultivation, thriftiness of crops, garden borders, insect control, disease control, and general appearance.

The company's supervisor of feeding has announced that the Servel cafeteria will buy fresh vegetables direct from Servel employees who raise them, paying prevailing prices. These vegetables will be frozen, stored and canned to supplement the regular supply of cafeteria food, so that employees may eat next winter the carrots they have raised this summer.

—*The Conference Board Management Record* 6/43



Entertaining Men in Service

THE latchstring is out for service men who return to the Goodyear Tire and Rubber Company for a visit. As a convenience to inducted employees, the company has fitted up a service men's lounge, located near the men's community rooms. It is equipped with upholstered furniture, writing desks, card table, radio, magazine racks, and a variety of reading matter.

Here service men on furlough can meet fellow workers. Officers at all entrances have been instructed to inform them that the lounge is at their disposal. Also, representatives of the company have been appointed to make personal contacts for the service men and to arrange meetings with their friends in the lounge.

An effort is being made to obtain current addresses of all former Goodyear men in service, the file to be kept in the lounge. In this way visiting service men may learn the location of former associates who are also in the armed forces.

Women employees of Lockheed-Vega Aircraft Corporation with relatives serving in the armed forces have been organized into the Vega Blue Star organization. One of the purposes of this group is to entertain service men each week. Entertainment consists of games, dancing, community singing, conga instruction, and refreshments.

In addition to the weekly hospitality programs, the activities of the group include the preparation of USO scrapbooks and the sending of Christmas gifts to service men. These women also assist in drives to reduce absenteeism and to obtain blood donors and in other morale-building activities.

—*The Conference Board Management Record* 7/43

Good Posture Aids Production

THE war plant that provides backless stools of uniform heights for its bench assemblers, inspectors, and other seated employees is taking one sure way of cutting output. Where one girl may be able to place her feet on the floor, another must support her position with feet on the rungs of the stool. After several hours, the rounded backs, the drooping shoulders, testify to the toll taken by fatigue from poor posture.

The war has brought new problems in factory seating as in other fields. The pre-war steel frame chair necessarily has given place to a wooden chair. Several industrial-seating firms have demonstrated that the wooden substitute can fill all the requirements for a good factory seat. The essentials in good industrial seating are:

The seat should be adjustable to the height of the machine or bench. The operator's elbows should be at the same distance from the floor whether sitting or standing. The workbench must not interfere with the operator's knees. The seat should be 16 to 16½ inches wide and slightly saddle-shaped.

The seat should not be too deep. The depth should be sufficient for comfort without constricting blood vessels under the knees. From 12½ to 13½ inches from front to back is adequate.

The back of the seat should support the lumbar regions—i.e., the small of the back, where fatigue first is noticeable. The back of the seat should be adjustable to the individual.

Footrests with a firm non-slip surface should be provided.

Seats that can be easily moved out of the way when the worker stands are desirable.

Good seating has proved an effective method of increasing production among both men and women. For several reasons it is especially important to the health of women. Continued standing, or sitting in a slouched position that crowds the abdominal organs, will aggravate menstrual pain. A recent study shows too that women who stand are much more prone than men to varicose veins; the study found a great excess in the proportion of women with varicose veins even when only women who had never been pregnant were considered.

—*Labor Information Bulletin* 7/43

THE PERSONNEL BOOKSHELF

Employee Evaluation Manual for Interviewers. By Richard A. Fear and Byron Jordan. The Psychological Corporation, New York, 1943. 39 pages. $1.75.

*Reviewed by Charles W. Books**

This manual was compiled primarily to assist in the training of new and inexperienced interviewers. Employing an evaluation form, the authors advocate rating of the applicant's qualifications on the basis of his previous experience, training, manner and appearance, sociability, maturity, and leadership capacities. In addition, a summary of the interviewer's impression of the applicant is recorded on the form.

Of course, as the authors point out, the interviewer determines the extent to which the evaluation form should be used, since this varies with the importance of the job to be filled. Use of such a checklist should facilitate more careful selection of employees; and it may, furthermore, provide valuable reference data when an employee is considered for transfer, promotion or discharge.

Since each of the seven rating factors comprises approximately six subdivisions, many interviewers may object that the form is too lengthy, except for the more important interviews. But the principle of rating the candidate by factors and preparing a summary of the interview can be retained even if the check list is not rigidly adhered to.

The suggestions offered in the manual should prove helpful in training an interviewer to shun the stereotyped question-and-answer procedure. With practice, he will develop a more interesting and skilful technique. The applicant will assume a personality, and through the use of tactful and leading questions the interviewer will be able to form a more accurate impression of his qualifications. This type of interview should certainly result in improved selection of employees and in heightened personal satisfaction and enjoyment to the interviewer himself.

Foremanship Training. Edited by Captain Richard B. Starr. Prentice-Hall, Inc., New York, 1943. 191 pages. $2.65.

Reviewed by Glenn Gardiner

Captain Starr is eminently qualified to deal with foremanship training, since he has acted as a training consultant with the Training Within Industry Service of the War Manpower Commission in Chicago. Currently on leave from the International Harvester Company, he is Training Director of the Chicago Ordnance District. The men who assisted him in preparing material for this book were all members of the original instructional force of the Engineering Defense Training Program in the Chicago area. John I. Yellott, who writes the foreword, is chairman of the War Training Committee and Director

* The Pennsylvania Company, Philadelphia, Penna.

of the Department of Mechanical Engineering, Illinois Institute of Technology.

This background of the editor and contributors readily explains why those chapters of the book that deal with training rely so heavily on the Job Instructor Training Program of the Training Within Industry Service. The author recommends that, in addition to reading the detailed explanation of this program in his book, every reader complete a Job Instructor Training course under the direction of a certified instructor.

The chapter on "Federal Law Affecting Foremen" is a brief and clear summary of labor legislation, dispensing with much of the material which does not concern the foremen and presenting for instant reference just what he needs to know on the subject. In the same simple manner, Captain Starr outlines the fundamentals of job evaluation, time and motion study, and wage-payment systems.

"People, material, tools and equipment are the factors with which a foreman works to accomplish his job—of these, people occupy by far the most dominant position" is the basic theme of this book; and thus a considerable portion of it is devoted to showing how people learn and act the way they do. Such chapters are "The Human and Physical Factors in the Foreman's Job," "The Worker," "How People Learn," and "The Sources and Handling of Grievances."

Foremanship Training, in clear, nontechnical language, gives the foreman and the foreman-trainee a knowledge of tested and proved management techniques. It will be of value to industrial executives, factory superintendents, and most particularly to industrial training directors.

PUBLICATIONS RECEIVED

The Use of Part-Time Workers in the War Effort. By Helen Baker and Rita B. Friedman. Industrial Relations Section, Department of Economics and Social Institutions, Princeton University, Princeton, N. J., 1943. 48 pages. $1.00.

The Personal Factor in Accidents. *Emergency Report No. 3,* Medical Research Council, Industrial Health Research Board, 1942. His Majesty's Stationery Office, London, W.C.2, England. 19 pages. 4*d.*

Lecture Notes for Course in Foremanship and Works Supervision. The Institute of Industrial Administration, Artillery House, Artillery Row, Westminster, S.W.1., England. 12 pages. 2*s.* 6*d.*

Wartime Opportunities for Women. By Evelyn M. Steele. E. P. Dutton & Co., Inc., New York, 1943. 181 pages. $2.50.

Maximum Utilization of Employed Manpower: *A Check List of Company Practice.* Industrial Relations Section, Department of Economic and Social Institutions, Princeton University, Princeton, N. J., 1943. 51 pages. $1.00.

Planning Meals for Industrial Workers. Nutrition and Food Conservation Branch, Food Distribution Administration, Washington, D. C., 1943. 27 pages. (Obtainable without charge upon application to the regional offices of the Food Distribution Administration.)

Labor's Views on American Economic Policies: *Proceedings of a Forum Meeting Sponsored by The Economic and Business Foundation.* By David A. McCabe, Boris Basil Shishkin and J. Raymond Walsh. The Economic and Business Foundation (Incorporated), New Wilmington, Penna., 1943. 38 pages. 25 cents.

Safety Standards for Young Workers

THOUSANDS of 16- and 17-year-old boys and girls are going to work to meet manpower needs created by expanding industries and withdrawals of men for military service. Because these young workers are inexperienced and in most cases lack the characteristics of judgment and caution that make safe workers, the Children's Bureau of the U. S. Department of Labor is issuing a series of leaflets to assist personnel people and others in the placement of young people in safe jobs. The series is entitled *Which Jobs for Young Workers?* Each leaflet, with the exception of the first (which is an introduction to the series), is concerned with a particular occupation or industry. Six of the seven leaflets issued in the series to date list jobs relatively safe for young workers as well as those considered too hazardous for them. The industries or occupations for which advisory standards have thus far been established include shipbuilding, lead and lead-using industries, employment involving exposure to carbon disulphide, employment involving exposure to chlorinated solvents, metalworking operations, and welding.

Additional leaflets, covering other industries or occupations, will be issued from time to time. The recommendations made carry no legal compulsion. Copies of the leaflets may be obtained without charge upon request to the Children's Bureau, U. S. Department of Labor, Washington, D. C.

The Federal Fair Labor Standards Act of 1938 gives the Children's Bureau power to declare various occupations too hazardous for minors of 16 and 17 years. This Act covers only those establishments that produce goods shipped or delivered for shipment in interstate commerce. The Children's Bureau declaration has the effect of establishing a minimum age of 18 years for employment under the Act in the occupations declared to be hazardous, whereas the basic minimum age for other occupations under the Act is 16 years. Hazardous-occupations orders, which have the full effect of law and carry a penalty for violation, have been issued to date for the following industries or occupations: explosives manufacturing (Order No. 1), work as driver or helper on motor vehicles (Order No. 2), coal mining (Order No. 3), logging and sawmilling (Order No. 4), operating power-driven woodworking machines (Order No. 5), and work involving exposure to radioactive substances (Order No. 6). The legal procedure for issuing hazardous-occupations orders, however, does not lend itself to the quick action necessitated by the war. For this reason, the advisory-standards method has been developed in order to meet the immediate need to safeguard young workers in occupations or industries not covered by mandatory hazardous-occupations orders. The Children's Bureau provides a consultation service for employers who wish additional details on advisory standards and mandatory orders concerned with the employment of minors.

—S. W. HOMAN, Safety Engineer, Industrial Division, Children's Bureau, U. S. Department of Labor

Trend of Child Labor

IN view of mushrooming labor needs, it is significant that 1942, the first year of the participation of the United States in the present war, found this country with a much higher standard of protection for working minors than was the case in World War I. On April 5, 1917, when the United States declared war against Germany, the effective date of the first federal child-labor law with its minimum age of 14 years was nearly five months in the future, and before the war was over that law was destined to be declared unconstitutional by the U. S. Supreme Court.

During the quarter-century that followed, the belief crystallized that children should have the years up to 16, rather than only to 14, free for education and normal growth. Scarcity of employment opportunities during the depression, and

a growing realization of the need for a better-trained citizenry to meet increasingly complex social and economic problems, hastened the tendency to outlaw, through state legislation, the full-time employment of children under 16.

The increasing number of children attending school beyond the elementary grades is further evidence of this social trend. In 1920 only 32 per cent of the population between 14 and 18 years of age were enrolled in secondary schools, compared with 69 per cent in 1938. Enrollment in secondary schools increased from 2,494,676 in 1920 to 4,799,867 in 1930, or 92 per cent. In 1938, the latest year for which figures are available, the enrollment was 6,736,939, an increase of 40 per cent over 1930.

By December 7, 1941, when Pearl Harbor was attacked by Japan, 14 states had adopted a basic 16-year minimum age, and the Fair Labor Standards Act of 1938, declared constitutional by the U. S. Supreme Court February 3, 1941, set the same standard. Though the federal provisions apply only to the work of children and young persons under 18 years of age in establishments producing goods for shipment in interstate commerce, they affect most work in manufacturing plants, because a large majority of such plants carry on an interstate business. The basic minimum-age standard of the act—16 years—therefore has been of great value in preventing a large influx of 14- and 15-year-old workers into factory employment.

However, the dislocation of the labor force in the United States as a result of the war has had an important effect upon the employment of children and young persons. Their services have been increasingly in demand in industry and trade. Between 1940 and 1941, the number of minors who obtained employment certificates for full-time or part-time jobs more than doubled. In the first six months of 1942, the number was 62 per cent greater than in the corresponding period of 1941.

—Ella Arvilla Merritt in *Monthly Labor Review* 3/43

▶ WHEN THE RESEARCH LABORATORY of Standard Oil Company of California wants to determine women workers' fitness for a particular job, a woman specially designated for this task tries her hand at the job. At the end of a week she makes her recommendations. This experimenter has investigated 12 jobs and discovered that women with no technical background can be trained to handle practically all of them.

—*Industrial Medicine* 7/43